Gov. L. W. Tazewell

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NEW SERIES.

EDITED BY THOMAS S. PLEASANTS.

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THE FARMERS' REGISTER.

THOMAS S. PLEASANTS, EDITOR.

NEW SERIES. MARCH 31, 1843. VOL. I.—No. 3.

AGRICULTURAL PERIODICALS—SUGGESTIONS TO FARMERS.

TO THE EDITOR OF THE FARMERS' REGISTER,

—Allow me, sir, this snowy day, (the first worthy of the name we have had this winter,) to congratulate you and the public on the handsome appearance and interesting matter of the first number of the new series of the Register. Periodicals on the subject of agriculture have done, and are destined to do, much good in our common country. But the benefit which they confer is not so great as it might and ought to be—owing to the fact that, though farmers may read them, they do not snfficiently profit by the lessons therein taught. I know it to be fully the case with myself. When a new number of such periodical is brought from the office, it is seized and its contents are devoured with avidity; and probably it is laid by, never to be referred to again, without a single precept or principle therein recommended being put into practice. Now, we pay for these papers, and, in these times of pinching economy and close bargains, we ought to aim to get a *quid pro quo*. And if we do not get it in this case, the fault is ours. For my part, with the new year I have turned over a new leaf. I have prepared myself a small blank book with 26 pages, each page lettered at top alphabetically. Whenever I read an agricultural paper, I consider well whether it contains any thing which may hereafter be of use to me—if so, I enter in its proper place in my blank book, the title and reference of such article, so that I may readily turn to it whenever needed. As the proper time and season comes around, I shall test every recommendation which seems at all plausible. The number of hints already laid by in this way for future use is rapidly accumulating. At page 8 of your first number I noticed what may be a most valuable suggestion on my farm, viz., the growing apples for live stock. In most of Virginia we are yet dependent on our sister states of the west for our pork. I am aware that this evil has been considerably lessened of late years by an increased amount raised in our own state, but it ought to be, and I hope in a few years will be, totally corrected. In those sections of the state where they have extensive *mast* ranges, raising a sufficiency of pork may be a matter of no great difficulty. But I am not blessed with any such aid. I have to keep my hogs within my own enclosure, and am entirely dependent on my own grass and my own products for rearing them. Clover, with enough roots to winter them, the refuse wheat and corn, will enable me to do tolerable justice to my pigs. But would not extensive apple orchards on my steep hill-sides and other waste spots, essentially aid the cause? A succession of fruit for nearly the whole year, with a little attention, might be had. The greatest objection to such a step which presents itself to my mind, is the fear that the negroes, particularly the younger ones, would be damaged by eating green fruit. A plantation within the range of my observation, having the greatest quantity of fruit, has also most sickness. Ripe fruit is highly conducive to good health; and is it not possible that where there is a great abundance, the negroes might be induced to await the ripening of the fruit, being certain that there would be a sufficiency for all? While touching the subject of the health of negroes, let me refer your readers to an article in the seventh volume of the Register with regard to the disease of *worms*. I read that article when it was first published, but, though read, it was unheeded, like many other valuable precepts, and the consequence has been, that I have lost two negro children with that disease. I have since, however, hunted up the article, and dosed the children as there prescribed; and, from the effects produced, I have little dread of worms this season. The remedy is simple and *home-spun*, and now is the proper time for its application.

A suggestion furnished by an experiment reported at page 24, I have already acted on. I have quite a large number of young peach trees, set out one and two years ago. I have hauled marl and put it around the roots of each tree, to incorporate with the earth as the trees are worked. Of the benefit to result I have not the slightest doubt. Not only the experiment above referred to, but also a case in my neighborhood go to strengthen my belief. A very fine cherry tree, which had been bearing the best of fruit for many years, began suddenly to fall off both in the quantity and quality of its fruit. The proprietor scraped off the surface of the earth immediately around the roots, and applied a number of loads of marl. In a year or two the fruit was restored to its former excellence.

I feel half tempted, by the article on soiling cattle, at p. 27, to try the experiment with two or three cows this summer. But I fear the heat of our summers is too great, and

PURCHASE
MAY 2 '33

that, though attended with success in Massachusetts, soiling in Virginia would only lead to disappointment. Have you, or any of your correspondents, had any experience in this matter, which may aid my poor judgment?

I was much pleased, as well as edified, by Mr. Randolph's admirable essay. His ideas on wheat culture coincide with my experience, viz., to fallow early, (say in August,) and *not* to replough, but prepare the seed bed with heavy harrows, or some other mode of shallow culture. There is a marked difference in the wheat, caused by a difference in the time of fallowing. Much has been said of the uncertainty of the wheat crop of late years. But, so far as my experience goes, no crop is more certain, if sown on clover turned under in August, the clover previously top-dressed in early spring with course farm-pen manure, and only one deep ploughing given. The land of course must have been marled or limed. No other old land, unless naturally calcareous, is at all fit to produce wheat. The time of sowing wheat in lower Virginia, a most important item, is as near as possible to the 10th of October. The variety of wheat to be selected will depend on the quality of the land. If the soil be light, the bearded golden chaff would be best. A medium soil would be best adapted to the red mountain purple straw, while a rich deep loam would in all probability do best in either red May or white Turkey wheat. I once sowed for experiment sake seed two years old. For a long time the wheat looked badly, very inferior to the wheat from new seed on adjoining and equal land, but in the end it improved rapidly and turned out well.

If my rambling remarks are acceptable to you and your readers, you may again hear from R. J.

February 24, 1843.

R. J. would be highly obliged to the editor, or some contributor, for concise and plain instructions for pruning and management of the Catawba and Isabella grape vines. On this subject so much has been written, and so much that is contradictory, that R. J. still feels at sea without compass or rudder.

We assure our correspondent that his remarks are highly acceptable, and that we shall be gratified to hear from him often.

In regard to pruning grape vines, the principle is simple; and, by proceeding in reference to it, one cannot go very far astray. It is always the wood of one season that produces the fruit-bearing shoots of the next. The object, then, in pruning is to retain so much of the latest growth as will be sufficient to yield a crop; and the crop should be proportioned to the vigor and age of the vine. To obtain good fruit, much depends on the mode of training. If the vines are confined to a post or stake, it is necessary to prune close, or the luxuriance of the foliage will stifle the fruit, and cause the vines to be almost unproductive. This effect may be remedied, however, in some measure, by detaching a portion of the leaves occasionally, in order to admit the sun and air. But the trellis offers every advantage in training vines, and is indeed indispensable to the production of perfect and high-flavored fruit. The simplest and perhaps cheapest mode of constructing a trellis is to make use of wire instead of slats. Three or four courses of strong wire attached horizontally to a row of posts, and confined to them by nails, forms the best trellis-work we have ever seen. It is used extensively in the neighborhood of Richmond, where the vine is cultivated with great success. The vines cling to the wires by means of their tendrils, and require very little support by tying; but with slats the tying is a matter that must be frequently attended to, or the young shoots will be broken off by the winds. The wires should be twelve or fourteen inches apart, commencing two and a half feet above the ground, which will make the trellis some six feet in height; and if they are painted once in a year or two with coal tar, to prevent corrosion by the weather, and are moreover attached to posts of cedar or locust, the trellis will be good for almost a lifetime. At the end of the first year after planting, if the vine has made a vigorous growth, and the growth been confined, as it should be, to one stem, take off the wood a little above the first or lowest wire, and tie the stem securely to it. The second season, three shoots, and no more, are to be permitted to grow; one on each side, to be trained to the wire, and one to grow upright. The next year repeat the same process at the second wire, and so on from year to year until the vine has reached the upper wire. By the time the vine has attained its full height, the side branches, which must in the mean time be shortened in about the same proportion as the upright stem, will have reached the side branches of the adjoining vines, and the trellis will be filled up. The branches alone are intended to bear, and they will throw out shoots from nearly every bud. All the subsequent pruning that will be necessary is yearly to shorten the shoots of the previous season, cutting them so close indeed as to leave little more than spurs. All this may appear tedious and troublesome to those unacquainted with the management of the vine, but in reality the trouble is not great, and will be regarded rather as a pleasure by the lover of fine fruit. In addition to the Catawba and Isabella, we would recommend the "Virginia seedling,"

which is probably the finest native grape for this climate that is cultivated. It bears most abundantly, and never rots even in the wettest seasons. It may be had, with many other fine fruits, of John Carter, near Richmond, who has done more to introduce good fruit into this part of the country than any other man.

The native vines grow with such luxuriance that they should have a space each way of not less than eight feet.

We would add a word on the subject of lisoing. We have had no experience in the matter, but, with a view to try it, we have from time to time made various inquiries, and have been informed that, even in our hot climate, cattle do not suffer by confinement to stalls during summer. In several instances, we understand that cattle, kept for dairy purposes, are regularly stabled in the vicinity of Richmond. We can perceive no reason why they should suffer by confinement any more than horses: indeed it is well known that oxen perform much better in hot weather by being treated like horses, instead of being turned out to pasture.

HOME IMPROVEMENTS, &c.

To the Editors of the Tennessee State Agriculturist.—Is it not the desire of every parent that their children should love home? if so, beautify and adorn your homes, so as to make them the most pleasant and loveable place to them.

"The spring time is coming," the season when dame nature decks herself in her gayest attire, and all things living seem endued with new life and vigor. Begin then with nature; she will lend you kind assistance; plant trees, fruits and flowers, tend, work and water them, let your children assist you, give each his portion in the labor of love—who that ever planted a flower, and watched it from the putting the unsightly root into mother earth, to the first peeping forth of the green leaf, to the full expansion of its beautiful bloom, but looks back with pleasure on his sensations of delight and exultation, as he culled it for the one he loved best? How his face glowed and his heart beat as he eagerly displayed the prize! Who can walk in the garden at dewy eve or rosy morn, inhaling the delightful perfume rising as incense to the Giver of all good, from every bud and flower, for the sparkling drops kindly sent to refresh and invigorate, and not feel his own heart lifted up in praise and adoration for so many blessings? The mind is naturally led to harmonious reflections by contemplating nature in her most alluring forms. Adorn your homes then with all her choice productions, so that in after life, when your children are surrounded with care and trouble, home will rise up as a green spot in memory's waste. Let your children share your pursuits, it will make them love home better, more affectionate toward each other, and give them more confidence in you; they will find there is indeed "no place like home," instead of an irksomeness and reserve in your presence, they will feel confidence and consider you their best friends and companions.

Are not the Swiss and Scotch attached to their wild, rugged, and often barren country, more than any other people? It is because they bestow more labor on it, they toil incessantly in tilling the earth, and feel more affection for that spot. In most countries, the great struggle is, to keep the homestead from generation to generation, while we still continue the "squatting" propensities of our forefathers; our children, like a flock of birds, leave us as soon as fledged—not but I would have them independent, have them so by all means, and to have them so, I would do away the great love of speculation, the making haste to be rich, the effects of which so many are sinking under at this very time: and make our boys *quiet*, *sober* and *intelligent* men, our girls *well informed*, cheerful, healthy, amiable and affectionate. If you wish your boy to be a good son, good brother, good husband and good man, make him love home, it will also deliver him from the manifold temptations that beset a young man's path—he will, by sharing his mother's and sister's pursuits, acquire a greater interest in them, and have a more affectionate regard and greater sympathy with them; it will rub off the rough points of his character, refine and polish him, strengthen and exalt the mind of the sister, add ease and grace to their deportment with the rougher sex. By making home agreeable, you heighten the affection of your children for yourselves, and prevent their seeking enjoyment and amusement elsewhere—you will have them more under your parental eye, and thus be able to check many an embryo fault kindly and gently, which, if left unrestrained, would wring many a tear of anguish from your hearts. Has not the Father of *all* made this universal garden beautiful and lovely in the extreme? Is it not enriched with all that is pleasant to the eye and grateful to the taste; even every thing that the heart of man can desire, to make this, our temporary home, a paradise; and shall we not follow such a glorious example, and make the transient home of our children pleasant and sweet. By adorning, making them pleasant within and beautiful without, they can in truth say, "there is no place like *home*."

If you think, dear sir, that your paper will not be disparaged, you shall again hear from

Franklin, Jan. 1843. Aunt Charity.

PLACE AND MANAGEMENT OF THE DUNG-HEAP.

September 13, 184?.

Farmers have generally found out the advantage of having a dung-pit instead of a dung-heap; but still the rich drainage of the dung is much of it allowed to run away; the urine from the stable, &c., does not half of it run into the dung, though it is the best part, the essence of the whole; and the privy manure, which is better still, is mostly neglected altogether.

All drainings from the stables, cow-houses, and sties, should run into the pit, and the overflowing should be caught in another pit, to throw back in dry weather.

The following is a cheap and effectual method of doing all this:—When convenient, the pit should be on the north side of a wall, or of some trees, to shade off the sun; or under a shed, to keep off both sun and rain; but these advantages cannot always be had without too much cost.

Having selected the best place for your pit, first lay in way soil, peat, or any soil as different as possible from that of your farm, and give it a hollow surface, like a great tea-saucer. Upon this lay potato stalks, and any other vegetable matters, easy to ferment, and hereupon a layer of dung. Next a layer of vegetable matter, as peat, turf, bark, rotten weeds, ferns, leaves, or any kind of dead vegetable, to increase your quantity; and so every week, cover your dung from the stables, sties, &c., with three or four times as much dead vegetable matter; thus making up your heap in alternate layers. The urine should all run into the pit from stables and all, by narrow drains, where it will not be much exposed to evaporation; and another such drain should lead from it to a lower pit, to catch the overflowings when there are any; and keep them to throw back upon the dung in dry times. This lower pit should be deeper and smaller than the other, and must never be allowed to overflow, as that would be waste. It may contain cabbage stumps, and other things difficult to work, which may be thrown back upon the heap as they rot.

The lower pit may be used as a store of liquid manure, for watering young corn, in May or June; which gives it a start, and much strengthens its growth. In leaky ground, the bottom of the pits should be *staunched* with clay; and stones or gravel stamped in, to harden it.

The privy should discharge into the large pit, if possible, or else into the small one; and coal ashes (but not wood ashes) are good to throw where this comes out. Saw-dust or turf-dust from the stack do very well. House-washings, as soap-suds, &c., should also be thrown on the heap; but the wash of the country, and heavy floods of rain should not be allowed to enter it, but be led into the meadows by other channels.

In wet seasons, the top should be slanted to turn off the rain.

Each layer of dung being covered with a layer of peat or other dead vegetable matter, the whole heap, when finished, should be crusted over with way soil, or other earth, to retain the vapors.

The fermentation will be slower or quicker, as it is more or less covered and compressed.

Wherever your heaps are made, whether in the yard or the field, give them a bed of some sort to absorb the drainage, and crust them over with soil, and mix all up with the dung before spreading. The drainage carries down the strength of the heap; sometimes enough to kill the seed in the place where the heap stood; whilst it would have been of the greatest benefit if spread out with the dung.

Portable manures, containing great strength in small compass.

These are very valuable to the farmer at a distance from town, one load being, in many cases, sufficient for several acres. They generally force forward the crop, without doing much to enrich the soil with humus.

Salt, 1 ton (value 25s.) is enough for ten or twenty acres top dressing; though much more is used when ploughed in to kill weeds, &c. For this purpose a ton may go to 3 or 4 acres.

Soot is an excellent top dressing, twenty bushels per acre; perhaps still better with two or three cwt. salt, just damped to prevent flying about in spreading. It should be sown upon wheat in calm evenings, when rain is expected.

Gypsum, on clover, when wet with dew or rain, and the weather clearing, that it may stick on the leaf; 5 or 6 cwt. per acre.

Bone-dust excellent to drill in with turnip seed, 10 to 30 bushels per acre; and better mixed with half or quarter as much as wood ashes. A top dressing of the turnips, after hoeing; of gypsum, 3 cwt. and salt 1 cwt. per acre, would probably help the bone-dust.

Nitrate of soda, and some other more expensive manures, seem to pay very well, when judiciously used; but the object of this paper being to help the small farmer forward, with but little outlay, they need not be dwelt on here.

It will be well, however, for the farmer, to know that lime, in compost with three or four times as much ditch or pond mud, laid out not very thick, and occasionally turned, gradually produces nitrate, more or less, according to the quality of the mud.

I am, sir, yours, &c. &c.

J. Prideaux.

—*American Agriculturist.*

CHARCOAL FOR MANURE.

Charcoal, in every form, is believed to be useful on all kinds of land. The best evidence we have of this is the fertility of coal beds, which last a great number of years after the coal pits have been formed. More than 50 years ago our attention was annually turned to this fact while tilling corn in fields where pits had been made long before. We noticed that wherever an old coal bed was seen the

corn was uniformly more thrifty than in other places. These old beds were readily known by the darker appearance of the soil, and by small bits of coal still visible on the surface.

Charcoal with us is probably too dear to be used *in fields*, as manure. It has been applied, however, to garden plants, and it may be found the best article, on all accounts, to be applied to vines of all kinds; for it drives off the bugs and flies, and it renders the earth more warm, by retaining the heat, than any white substance will do.

Those who use it in flower pots, mix it in equal parts with garden mould. It absorbs water rapidly, and when the proportion of coal is greater than the loam, more water will be required, as the soil will be more porous.

The chemists account for the great fertilizing qualities of charcoal by attributing to it the power of absorbing, very freely, carbonic acid gas and ammonia, from the atmosphere.—*Boston Cultivator.*

USE OF ASHES.

The constituents of hard and soft wood ashes differ in some degree, although the base or the alkali is the same. Dr. Dana has given the best analysis of ashes we have met with, and as it agrees in the main with those of Sprengel, Chaptal, &c., we shall condense it for this place. Ashes are in two parts, soluble and insoluble; leaching with water separates them. The average quantity of ashes from hard wood, soft wood, and wheat straw, and their soluble and insoluble parts in 100 parts of each, is as follows:

	Quantity of ashes	*Soluble*	*Insoluble.*
Hard wood,	2.87	13.57	86.43
Soft wood,	.0083	50.	50.
Wheat straw,	.044	19.	81.

Of the hard wood, 100 parts contain soluble and insoluble matters as follows:

	Soluble.
Carbonic acid,	22.70
Sulphuric,	6.43
Muriatic,	1.82
Silex,	.95
Potash and soda,	67.96
	Insoluble.
Carbonic acid,	35.80
Phosphoric acid,	3.40
Silex,	4.25
Oxide of iron,	.52
Oxide of manganese	2.15
Magnesia,	3.55
Lime,	35.80

Soft wood ashes differ from hard wood principally in having less carbonic acid in the soluble and insoluble parts, and more silex and oxide of iron in the insoluble. 100 parts of straw ashes show the following results:

	Soluble.
Sulphuric acid,	0.2
Muriatic acid,	13.
Silex,	35.6
Potash and soda,	50.
	Insoluble.
Phosphoric acid,	1.20
Silex,	75.
Oxide of iron,	2.50
Lime,	5.80
Charcoal,	15.50

Leached ashes, as commonly found, nearly resemble the insoluble of these tables, except that as the process is conducted less skilfully by the ashery man, there is always more or less potash left in the ashes after leaching. According to Dr. Dana a cord of leached ashes contains of phosphoric acid, 117 lbs.; of silex, 146 lbs.; oxide of iron, 17 lbs.; magnesia, 19 lbs.; carbonate of lime, including that added in leaching, 3,072 lbs., and potash 50 lbs. While unleached ashes belong to the alkalies, it will be seen that the leached ones must be classed with the carbonates.

The manner in which ashes act on soils is dependent in a great measure upon their condition, whether they have been leached or not. Ashes act on soils chemically and mechanically. The potash contained goes to form silicates, hence the great effect of ashes on grass lands, silicates being essential to the grasses. They act chemically too in neutralizing acids existing in the soil, and producing a bad growth of weeds or plants not desired. Their mechanical effects are found in their rendering soils less tenacious, and rendering them more suitable for crops. The chemical effects of leached ashes are less than those of unleached, while from the additional lime they contain, their mechanical effects are greater. So far as regards the phosphates which exist in ashes, and which act so important a part in their action on soils, there is little difference between the leached and unleached.

As to the soils on which ashes are the most valuable, experience and observation show that ashes are more efficacious on soils that are naturally dry, or have been made so by draining. On wet soils, leached ashes produce little or no effect, but we have found the best results on moist meadow land, by sowing unleached ashes over the surface at the rate of about 20 or 30 bushels per acre. It had the effect of partially destroying the mosses and coarse grass which occupy such lands to the exclusion of good grass, and it gave a very heavy crop for two or three years after its application. Old pastures on light lands are materially benefited by leached ashes, their effect being on such soils but little inferior to gypsum, though a larger quantity must be applied. Some ten years since we applied a heavy dressing of leached ashes to about an acre of land in the centre of a field, and the beneficial effect the last season was clearly discernible in the pea crop grown on this field. This was not light land, but not wet. It has been twice well manured in this interval, yet the ashed land appeared to maintain its supremacy, feeling the manure as much as that to which no ashes had been given. The effects of ashes are unquestionably most valuable, and should always be made available where ashes can be had. Too many farmers are in the habit of selling them from their farms, a miserable policy, as no such manure should be

allowed to leave the farm. Ashes are exceedingly useful in making compost from swamp muck or other vegetable matter, where an alkali is necessary to promote decomposition. —*Albany Cultivator.*

SIXTH AGRICULTURAL MEETING AT THE STATE HOUSE.

Boston, Wednesday, March 1, 1843.

Subject for discussion—mineral and concentrated manures.

Dr. C. T. Jackson said, that before entering upon the regular subject, he would give by apparatus, an illustration of the mode by which sap ascends. The process is called endosmose, or the passage of liquids through membranes. By taking bladder or gold-beater's skin, he showed that liquids heavier than water will be made to ascend in a tube to the height of 30 feet or more. Sap vessels have diaphrams, and by means of these they send up sap by an impulsive force—not by mere capillary attraction. The bladder or skin will cease to act instantly, if a single drop of hydro-sulphate of ammonia be put in the liquid, or if the least putrefaction has taken place. The process has apparently some connexion with, or aid from, electricity. Before the meeting closed, the liquid had been forced up in the tube about 6 inches; and this by the action of the bladder.

Dr. J. then said, that since he spoke there two years ago, many improvements have been made—many experiments tried—some good books and many indifferent ones had been published. While laboring in the country, he he had found very many inquiring farmers—many who wanted the light which science can give them. Once, books upon farming were decried as unsafe guides—and this not entirely without reason. The data in them were limited—the conclusions not always sound. But recently some improvements have been made—many scientific men in Europe have been at work upon agricultural chemistry—many practical men have been experimenting both there and in this country. He and others here have been busy in the same cause. Science is yet to do much for agriculture.

Chemistry must tell us what our crops take from the soil and what from the atmosphere. The crops themselves must be analyzed. Science must tell us what change takes place in a barren soil when it becomes fertile; it must tell what kind of manure is best suited to each particular crop. It will ask if there is any one general compost, suited equally and well to all crops; it asks too, if mineral manures are of any value.

He would say something upon *mineral manures.* Some of these, the *soluble* ones generally, are indispensable to vegetable growth and health. The coating of cane, corn-stalks, straw, &c., always contains silica, or the matter of fine sand and of flint. This silica *alone* is insoluble and will not act; but it is dissolved by potash and combines with it, and enters into the plant in the form of silicate of potash. It is this which gives strength and firmness to the plant and its vessels. It is this which holds up the wheat and keeps it from lodging. Where this is abundant the wheat will generally stand; but where there is a large quantity of vegetable and animal manure, the stalks are soft and the grain lodges or falls. To get a good crop and have it stand, you must have much silicate of potash to strengthen the fibre.

The quantity of this silicate of potash required by the different plants, is very variable; plants of the same kind do, according to the soil on which they grow, take it up in very different proportions. Mr. Levi Bartlett, of Warner, N. H., has learned and shown that *grasses*, even, may have too much of this, so as to become hard and wiry. Where silex and potash come together in equal weights, the silex is soluble in water.

A soil that has been tilled a long time, is liable to be deprived, in a great measure, of its *soluble* silex. Here, ashes is the best restorative.

Alumina, which makes a part of clay, enters very sparingly *into plants;* but the clay retains water and gives tenacity to the soil. Burnt or baked clay is a very valuable manure: the benefit of burning is in consequence of the silicates in the clay being rendered soluble by the action of the fire.

Magnesia. This has been abused: in a pure state it may be injurious to vegetation; but when oxidized, it is good, and it enters in some form, into most plants; phosphate of magnesia is in all the grains; but magnesia should be used in compost, if at all; for when applied alone, it makes a cement. In compost with peat, it is valuable.

The proper management of lime is a delicate operation. Rightly used, it is valuable: in compost *properly applied*, Dr. J. never knew it to fail of doing good. It is to the farmer the most valuable of all the mineral manures, because it can always and in almost all places be obtained. But this should not be put in stable dung and animal manures; there it would decompose and weaken; but it should be used in compost.

A gentleman in Rhode Island was advised to put one load of night soil to six of peat. Thus mixed, the night soil remained unchanged; but upon putting a cask of fresh dry slaked lime to a cord, the night-soil soon lost its offensive smell, and the heap became throughout most excellent manure, and this in a few days.

In much of the peat there exists alum and copperas; here lime is a good top-dressing upon the peat meadow. It forms, with the matters in the peat, a sulphate of lime—this is plaster.

Potash and soda are efficient and valuable alkalies, but they are too expensive for general use. In compost they are good, but when applied in solution—that is, when dissolved in water and sprinkled upon the soil, they are sometimes found inert.

Nitrate of potash, or saltpetre, and nitrate of soda, are good in many places, and for some crops. Squashes, pumpkins, melons, &c., contain them; and this is the reason why

vines do so well where a barn has once stood. These articles may be spread upon the surface of the soil in small quantities. Should you put a small lump or crystal of nitre by a hill of corn, that spot will always be wet; and this might be a good way of applying it.

Iron is found in many trees and in grains. Taken into the animal system in the grains, the iron makes the red globules of blood.

[Here Dr. Jackson showed several drawings of Indian corn, or sections of kernels of corn, showing that a coating or thin sheet around the germ, is iron. In the southern corn, the central and upper part is all starch, while the sides, or the hard flinty part, contains *oil*. The Tuscarora contains no oil, and will not pop. The small flinty corns pop well because the oil extends all around them. The examination of these corns he has made in connexion with Mr. Hayes, who is one of the best chemists in the commonwealth. The Tuscarora corn, as it contains no oil, is not so good for fattening as others, but it cooks the more readily for being without oil, and is good for puddings, &c.]

The best manures for corn are those that are full of ammonia—as the dung of animals, flesh, &c. An experiment of his own had shown that water in which carbonate of ammonia had been dissolved, gave vigorous growth to corn. Corn requires less lime than wheat.

Manganese is found in the ashes of many plants; and it is abundant in most peats, and these peats are vegetable products.

Bones are good for many soils—they are among the best manures, where the soil is wanting in phosphate of lime; but where this abounds, they are of no value—as is the case at Mr. Cushing's, in Watertown.

Gypsum is a valuable mineral manure in the interior, but near the sea-coast, the salt spray is supposed to have the same action, and to render the plaster inert. In the interior of France, it is found that 300 pounds of salt are as valuable as *one ton* of plaster. (We are apprehensive that there was a slip of the tongue here, but perhaps not.—*Rep.*) Gypsum acts unequally upon the different soils in the interior, and this is unfavorable to Liebig's theory, that plaster acts principally by absorbing ammonia from the atmosphere.

Ashes are very good, generally, on light soils; and here leached ashes are as good as any. He had supposed that repeated ashing will exhaust the soil of its vegetable matters; and yet it has been proved that on Mr. Anthony's sandy lands, in Rhode Island, the vegetable matters increase under the operations of ashing and cropping.

The value of any manure is in direct proportion to the nitrogen it contains—or that which makes ammonia. The best manures, or strongest, therefore, are flesh, urine, dung, &c. Guano, the dung of sea-birds, brought from South America, is exceedingly powerful: in *small* quantities it produces wonderful effects.

Mr. Teschemacher read an account of a wonderful discovery in Germany, of a mode of *preparing seed*, so as to dispense with the use of all manures, and yet get most luxuriant crops of every kind. We wait for more light.

The same subject will be resumed at the next meeting.

Wednesday, March 8, 1843.

The President, Mr. King, in the chair.

On motion of the Hon. B. V. French, the following resolve was adopted:

Resolved, That the farmers of this commonwealth, here assembled, and who have assembled weekly during the present session of the legislature, for the purpose of discussing and considering subjects pertaining to agriculture, have heard with pleasure, that their distinguished fellow-laborer, Rev. Henry Colman, late agricultural commissioner of the commonwealth, and as such, the Sinclair of America, intends visiting Europe the coming season. Few in our country have advocated with more zeal and eloquence the farming interests; few have collected such funds of agricultural statistics, or been so industrious in dispensing the same for the public good. Therefore, we most cheerfully recommend him to the civilities and kind attentions of European agriculturists.

And it was

Voted, That the above resolve, signed by the officers of the meeting, be communicated to Rev. Henry Colman, and that such editors of agricultural papers in this country, as may concur with us in sentiment, be requested to publish the same.

Daniel P. King, *President.*

Johnson Gardner, } *Vice Presidents.*
Benj. V. French, }

Allen Putnam, }
S. W. Cole, } *Secretaries.*
H. C. Merriam, }
Wm. Buckminster, }

Dr. C. T. Jackson then resumed his remarks, saying that last week he dwelt mostly upon *organic* manures, but should this evening dwell more upon the *mineral*, though the two are closely connected, and cannot be separated.

The minerals are decomposed by acids, alkalies and earths. When thus decomposed, the plants take them up; you may with the microscope see the crystals in the sap vessels of the plants. The plant takes up the matters that come within its reach, and has not full power to expel such as are deleterious. Opium or arsenic will kill a plant if taken into it. Generally, however, the plant takes only what it needs.

Carbon, in a moist state, undergoes a slow combustion, and yields carbonic acid. The vegetable matters, during the changes which decay works in them, first become *acid;* then take oxygen from the air and from water; then putrefy—then form crenates, apocrenates, &c.; then oxidation comes, and carbonic acid follows.

Animal matters first become *alkaline*, and give ammonia; then they become a brown matter, containing nitrogen. When you mix animal and vegetable matters, you form a large portion of *neutral salts*, and thus make most valuable manure. A fallen tree, in its decay kills the surrounding grass by an excess of

acid; a decaying animal carcass at first kills by the excess of ammonia; but when the excess passes off, the vegetable growth is more vigorous.

Acids decompose rocks and take out from them the alkalies. The stone found in a peat-bog is always white, because the acids of the peat have taken out the alkaline coloring matters. A soil containing iron is much benefited by an application of ashes, lime, or animal matter. The yellow color of subsoil is caused by iron. Bring this up to the surface, and by the action of the air, the iron is oxidized and blackened.

Plants contain ammonia—this is a new discovery of science. But in the heart of Indian corn and of all seeds ammonia exists. There is some of this ammonia in the atmosphere, but not enough—the greater part comes from the decomposition of animal matters in the soil; and the value of a manure is in proportion to the ammonia it will form.

(Thus far in the lecture we took a few notes; but becoming satisfied that we could do no justice to Dr. J. in an attempt to report him, we laid down the pen. He was obliged to go over so much ground in so short a time, that his statements were necessarily concise, and gave little more than results, without explaining the steps by which they were reached.

Last week we were far from confident that we gave his views correctly, and now we are less confident that we can give a true account of his positions and teachings.

The lecture was interesting and instructive. The meeting, we think, are under great obligations to Dr. J. for his willingness to spend so much time and be at so much trouble to give them information. We less regret our inability to report him, from the fact that we may hope to find the results of his analyses, and an explanation of his views, in his report upon New Hampshire, which will probably be published next summer.)

Johnston's Lectures on the application of chemistry and geology to agriculture, now being republished in this country, by Wiley & Putnam, New York, and for sale in Boston by Little & Brown, Dr. Jackson noticed with high praise. He called it *the best* book upon agricultural subjects that has ever been published. One thing there advanced, Dr. J. said he would draw attention to, without adopting it, viz: that a strong luxuriant crop draws to itself the carbonic acid of the atmosphere; so that he who manures highly, draws to his field the carbonic acid from his neighbor's poor field;—making good the Scripture, that to him that hath, shall be given, and he shall have abundance.

In a few eloquent closing remarks, Dr. J. noticed the growing attention of the world to agricultural science, and the mutual aid which the practical farmer and the chemist can give to each other.

Errata.—Last week, we made Dr. J. speak of magnesia as becoming "*oxidized.*" It is an oxide in its common state:—the mistake was ours, and not Dr. J.'s. His statement "that in the interior of France it is found that 300 pounds of salt are as valuable as a ton of plaster," which we thought might be a slip of the tongue, was what Dr. Jackson meant to say; and he tells us that if he had gone to the extent of his authority, he might have said 300 lbs. salt were found equal to 5000 of plaster.

Subject for next meeting—The Honey Bee. —*New England Farmer.*

ON WINTER FURROWING AND DRILL PLANTING.

Cambridge. E. S., Md., March 7th, 1843.

To the Editor of the Farmers' Register.

—Having proposed to embrace in my late communication three interesting questions of agriculture, "surface manuring," "winter furrowing," and "drill planting," and having so far exceeded the limits I had allotted for the former, that I could not, without fatigue to the reader as well as the writer, accomplish the whole, I now, to verify the promise therein made, offer a sketch of my views and practice of the two latter, chiefly for the purpose of possibly exciting inquiry, and eliciting information, theoretic, as well as practical, by which we may finally arrive at their true solution.

My partial practice of this mode of conducting my (corn) crop, that is by "late fall" or "winter furrowing" and "drill planting," for about fifteen years, and my exclusive practice of it, for more than half that period; and my general course of reflection upon the *rationalia* in favor of it, have concurred to satisfy me by the general results, in various kinds of seasons, that it is the best mode of growing that most valuable staple of our section of country, (Indian corn,) and at the same time of sustaining, or improving the soil in which it is grown.

I would be understood in my remarks, to confine them to lands having a due portion of alumina, and at least a moderate coating of grass or vegetable matters of any kind.

The method to which I refer is the following:

During the winter, or late in the fall, I lay the field under a true and well turned furrow, sufficiently deep to avoid re-turning the sward in the subsequent work. The accuracy of this operation will have considerable influence on the eventual management and success of the method. If the sward be well turned, there will be but little occasion for the hoe, to clear away the grass; as but little will vegetate from its inverted position. In this state, the whole will lie till the season of planting, when a light plough is skimmed over the surface in the direction of the first ploughing, if the soil be very tenacious, or if it be friable, a sharp cultivator may answer the purpose; the "corn planter" is then introduced, which furrows, drops, covers, rakes, and rolls the corn in one operation; all which may be done, perhaps as well in the usual mode, without that instrument, though I have witnessed for several years its expedition and neatness of execution; and equally so, for turnips and other small seeds. F. H. Smith, of Baltimore,

is the patentee, and Mr. Sinclair of the same city, I believe, the manufacturer.

The lines in which I plant are four and a half feet apart, and the corn is dropped at about sixteen inches distance in the line: this is the distance I prefer, though the machine may be set for any reasonable difference by enlarging or diminishing the axis.

When the corn is sufficiently up, a light double-furrowing, single horse plough is run as near the plant as possible, and throwing the earth from it; and in a few days the earth is returned. This is the whole of my ploughing. I had the plough for this last work made by Sinclair for the express purpose. Its *double* furrow is not more than equal to the *one* furrow of an ordinary plough, and therefore the portion of earth turned by each is so small as not to endanger the covering of the young plant. After this, follows the cultivator as lightly as possible, simply to keep the surface at all times loose, and open to the free access of sun and air, and the drier the season, the more frequently I use this instrument. The hoe is but little required in ordinary seasons, and the general cultivation is as level as practicable.

By the free admission of the fermentative agency of the sun and air, the inverted sward will make progress in repleting the soil with the soluble and nutrient gases; the product of its decomposition will combine and be detained by its union with the moisture and alumina of the soil, and this crisis will occur in time to meet the peculiar demands of the plant, whose organic structure and vital powers will enable it to seize upon, eliminate, and apply to its uses all those particles of bodies in contact, suitable for its aliment; either rejecting before its absorption, or excreting after it, what may be unsuitable; and ammonia, one of the last products of putrefaction, thus generated, and detained in the earth, will most especially supply the demand of the plant for nitrogen, at the period of its seeding; without which element, a deficit of frequent occurrence, the grain will not contain an essential constituent of food intended for animal sustenance.

The soil, too, is at the same time improved, not only by the *artificial fixity* communicated to these naturally volatile substances, the gases; but also by the salts, and alkalies of the putrescent sward, which will contribute something worthy of notice, not only for the present, but for the benefit of a subsequent crop.

To these considerations in favor of "winter furrowing," another source of repletion to the soil and the plant may be added, from the *atmosphere*, and possessing the more importance from the late researches of Professor Liebig, reported in his "Organic Chemistry," an intellectual production, which language cannot adequately eulogise for its boundless acquisition to the natural sciences, and its unspeakable benefit and advancement of the agricultural interests in particular.

By the culture contended for, the porous surface of the inverted turf is presented as a sponge to imbibe readily the ammonia daily escaping to the clouds, from dead bodies on the surface of the earth, and held in solution by the rain and snows which fall upon it, which (ammonia) upon good authority, (Professor Liebig,) is asserted, on actual experiment, to be in considerable quantities; and thus, the soil is prepared to receive and embody it, in a state of *fixity* for years, by means of its alumina, and other substances present in the earth, for the purposes of the present, as well as future vegetation.

Contrast, then, this method impartially, and free from the fetters of preconceived opinions, with the usual method of *spring* and *summer ploughing*, and *cross ploughing*, &c. &c.; and what are the disadvantages of the latter?

The sward recently turned down, is thrown back into its former position; the grass is, as it were, re-planted for future *hoe* labor, in as much as it had not remained in a condition to suffer decomposition; or, as far as it had undergone this process, so far it is wasted by exposure on the surface, to sun and air, the soil loses the whole of that source of fertility; it is dissipated in the wide atmosphere abroad, or if a small portion remain, it has not suffered that *befitting process*, which nature requires for the regeneration and supply of a new plant out of an old one; in fact, it is a total loss to the soil, and to the plant.

The atmospheric source is rejected, the hard surface, throughout the winter season, or the period it remains unbroken, is impermeable to the rain and snows, that are rich with *one* of the *elements* of *nutrition*, it is chiefly returned again to the clouds, from which it had fallen in abundance, for the want of access to the chemical forces, which would have arrested and detained it in the earth.

By winter furrowing too, the most tenacious soils are easily reduced into a state of fine tilth for cultivation, when, by recent spring ploughing, they are difficult of reduction, and untractable.

By drill planting, much I think is gained; we may have, by it, more than double the number of plants that the usual method allows in safety, and leaving often two together, when they are nearly equal, and flourishing, the distances named will afford eight or ten thousand to the acre, and under the arrangement of the lines, north and south, and four and a half feet apart, they will have abundance of space for air and light.

My crops have not suffered from drought, as much as my neighbor's cultivated in the ordinary mode, which I attribute considerably to the continual flow of vapors, among the roots, from the fermenting mass below, promoted by the frequent use of the cultivator, preserving a friable, loose surface, and thus allowing the entrance of the *fermentative* agents; *heat*, *air*, and *moisture*.

Under the circumstances recited, my crops have reached, in different seasons, one hundred bushels shelled corn on one acre; four hundred and fifty on five acres; and seven hundred and fifty on ten acres, and so forth, as the seasons were more or less favorable; when my neighbors, under the usual method of cross-ploughing, &c. &c., have seldom obtained more than half those ratios.

Though perhaps unnecessary, yet I prefer

to state, that the two latter results are on the records of the Maryland Agricultural Society, and premiums awarded, under the legal evidence very properly required by a general rule of the society. The first, the hundred bushel product, has a similar evidence inscribed upon a silver pitcher, taken on a sweep stake in Delaware; and my competitors, I am informed, all practised the cross ploughing method.

I have been thus minute, that I may be sustained practically, as well as theoretically, in the comparative advantages of my method; of which I entertain the fullest conviction.

As the fact of rain and snow holding ammonia in solution, is one of much agricultural interest, and of late discovery by Professor Liebig, I will add a few words on the subject.

Liebig states not only the *presence* of ammonia in rain and snow, but that it possessed an *offensive smell* of *perspiration* and *animal excrements*—vol. i, p. 75.

My incredulity of the latter property, when the substance had been sublimated, and passed through the wide expanse of the atmosphere, that it should retain the odour of its origin, led me to test it, to satisfy myself of the fact of the presence of the substance, as well as of its retention of this acquired property.

My first analysis was made rigidly under the directions prescribed by Liebig; and with about half a gallon of snow, I obtained some small crystals, which rubbed with hydrate of lime, gave a distinct effluvia of pungent, offensive ammonia, though colored and confused in appearance by the action of the acid on the copper vessel, in which it was performed.

In my second attempt, I avoided this inconvenience, by altering my plan of operating, by which I saved time and labor, and had a result free from any possible adulteration.

I filled my copper still, containing one bushel, with packed snow; I attached to the short pipe of the still, a glass receiver, into which I put the muriatic acid; the first passing over of the steam, would necessarily contain all the ammonia of the whole mass of snow-water, and it would be instantly *fixed* by the acid in the receiver; thus I had but a small volume to concentrate for crystallization, and *that* free from adulteration of any kind; whereas, Liebig's method of evaporating the whole mass of snow in a vessel with the acid, would take much more time; and the result would not be so certainly pure, or so accurate in quantity.

His method with the rain water, I think also exceptionable. In this he passed over a portion of the first steam into the receiver without *acid* in *either*; he then added the acid to the water in the receiver, and concentrated it for crystallization. It would seem quite certain that the small quantity of water in the receiver, thus charged with the whole of the gas before the admixture of the acid, might part with much of it, especially at its elevated temperature.

The result from my second experiment was a plentiful supply of perfectly inodorous muriate of ammonia, for the most satisfactory examination; by rubbing it with hydrate of lime, fumes of pungent ammonia were disengaged, blended with a most intolerable carrion-like smell in its worst stage of putrefaction. The examination I repeated, to satisfy myself and others, who happened to call in at the time. I felt the force of the motto, "cras credemus, hodie nihil," my incredulity was removed, and in place of it, I possess a fact of great value, at least for myself, established, *one* that gives much additional force to the arguments I have used above for winter furrowing, and drill planting, as well as to those in my former paper, in favor of covering quickly with the fresh sod manures applied to the surface.

JOSEPH E. MUSE.

ANALYSES OF INDIAN CORN & RUTA BAGA.

TO THE EDITOR OF THE NEW ENGLAND FARMER.—In your last week's paper, you expressed a wish for analyses of Indian corn and of ruta baga. They are herewith enclosed—and for the purpose of comparison, potatoes are added.

100 lbs. of— Contain of	*Corn*	*Ruta baga.* Fresh dug.	*Potatoes.* Fresh dug.
Flesh-forming principles—Gluten, albumen, &c.	1.26	1.	2.07
Fat-forming principles—as Gum, sugar, starch, woody fibre, oil, &c.	88.43	13.	24.34
Water,	9.	85.	72.
Salts,	1.31	1.	1.39
	100	100	99.80
The salts are composed as follows:			
Of potash,	0.200	0.373	0.676
Soda,	.250	.165	.391
Lime,	.035	.125	.055
Magnesia,	.128	.040	.055
Alumina,	.016	.005	.008
Iron oxide,		.004	.006
Silex,	.434	.067	.011
Sulphuric acid,	.017	.127	.090
Phosphoric acid,	.224	.057	.067
Chlorine,	.008	.037	.026
	1.312	1.000	1.386

The acids and the chlorine are combined with the alkalies, metals and earths, and form salts, called sulphates, muriates, and phosphates of potash, soda, lime, &c.

What (you wish to know) is the *action* of the salts? So far as chemistry has yet gone, these are found combined with the *flesh*-forming principles only, and never with the fat-formers. They form a part of flesh, blood, sinews, bones, gristle. They are found in the animal body, only in combination with these tissues, or in certain secretions and excretions. As the elements of the animal tissues are identical in composition with certain parts of vegetables, which alone form them, we may infer, that in the animal and vegetable systems, the salts perform similar parts. Rigid analysis would probably show that the salts are always proportional to the flesh-forming

principles. As in the animal body, the salts form not fat, so in the vegetable, they form not a part of starch, gum, sugar, wood. Essential they are to the formation of the plant, by which the fat-forming principles are produced, and equally essential to the growth of the animal body. How they act, is unknown. It is determined by chemistry, that salts form certain definite proportions of certain parts of the body. We may infer, then, that their action is, to form only the substances of which they are essential elements. If supplied in quantity greater than the body requires to form these elements, they would probably be excreted as useless. Unless, then, you have some evidence that salts act on animals, as in some cases on plants, to increase bulk and developement, the position that salts exert "a greater action, in proportion to their quantity, upon the animal system, than the organized matters," requires farther proof. Now this proof chemistry expects from practised cattle-feeders and stock-raisers. The analyses above, compared with your experience, may throw some light upon the subject. With regard, I am your obedient servant,

SAMUEL L. DANA.

Lowell, Feb. 28, 1843.

We are truly thankful to Dr. Dana for this communication. It gives the information we asked for in some comments upon Dr. Playfair's lecture, in our paper of February 22, and it should be read in connexion with that article. It appears from Dr. Dana's analyses, that Indian corn is the poorest, pound per pound, for making *flesh*, (as distinguished from *fat*,) of all the substances named, excepting turnips and ruta bagas; and it is but little better than these. For forming *fat*, however, it is far before all the others. Supposing ruta bagas to cost half as much per bushel as potatoes—and estimating the potatoes at 62 lbs. per bushel, and the ruta bagas at 56 lbs., we shall find them very nearly equal in their flesh forming matters; but the ruta baga has the superiority in its *fattening* properties. Such is the chemical result; and it differs from our conjecture, that the ruta baga would be found best of all the roots for giving muscle.

We may extend our remarks upon this subject in some future number.—ED. N. E. F.

SEED CORN.

The following method of preparing corn for seed, has been pursued by the subscriber, with uniform success, for several years, to prevent its destruction after being planted by fowls, birds, or even hogs.

Take 1 bushel shelled corn in a basket, and immerse it in water, so hot, as scarcely to endure the hand in it—the corn to remain in the water until thoroughly warmed: raise out the basket with the corn to drain, have then ready some suitable vessel in which to pour it, and put thereon a pint of tar well warmed, stirring it immediately, until each grain is coated with the tar, which will easily be accomplished while the whole is warm (and this is the whole design in warming them)—then have ½ lb. of copperas ground, or finely pulverized, thrown upon the tarred corn and well stirred; then dry the whole by mixing slacked lime, ashes, plaster, or gypsum therewith, when it is ready to plant.

This coating of tar, copperas and lime, &c., is exceedingly unpleasant to the taste, which is the cause of its being free from depredation, and its unpleasantness will not be affected by the moisture of the ground.

I have kept what has been left after planting for 2 or 3 weeks and then used it for replanting, and it would vegetate well, but not so quickly.

I have also thrown what has been left from planting, of this prepared corn, where pigs and fowls had free access to it, without their eating a grain. It looks very dark and unsightly in appearance, but it nevertheless comes up and grows well.

American Farmer. JAMES C. ATLEE.

SALTPETRE FOR MANURE—SLAVERS IN HORSES.

Pomfret, Ct., Feb. 1843.

I sowed 75 lbs. crude saltpetre on two acres of ground, immediately after the hay cut thereon on 22d June had been removed. The grass assumed a deep green color, and grew rapidly till the 23d of August. It was then cut, and being cured, was put into the barn in the best order—weight about 2 1-2.

Horses eat this hay readily, but in half an hour after they commence slavering excessively.

Oxen take hold of it greedily, but in a few minutes cease to eat, and will take no more of it. P.

New England Farmer.

Lowell, Feb. 27 1843.

TO THE EDITOR OF THE FARMERS' ADVOCATE. —You ask me to express my opinion upon the subject of an article which appeared in the New England Farmer, signed P., upon the use of saltpetre as a manure, and as producing slaver in horses.

I can only say that I have used saltpetre more or less for twenty years, and have never experienced any inconvenience, from the effect of slaver, or from the bad state of the fodder: and I have no doubt that the ill effects complained of by P. were from some other cause than the use of saltpetre as a manure.

OLIVER M. WHIPPLE.

Mr. Whipple is a powder manufacturer. He possesses a large farm, which is skilfully managed. The refuse saltpetre he applies to his land; and no man in the state is better able to speak of the value and effects of saltpetre as manure.—*American Traveller.*

LARD OIL.

BY DR. SILAS LONG.

To the Editor of the Prairie Farmer.—I see in the Sept. No. you ask me, if not too much trouble, to write again my views upon the subject of lard and lard lamps, which you had by accident lost. I consider it not necessary now, as since I wrote that, I am fully satisfied the time has come when we can use lard oil, and of superior quality to the best winter strained sperm oil, and it will burn in any of the common lamps, and give a superior light. Every farmer, and I may say every good citizen in the western states and territories, should feel a deep interest in encouraging the manufacture of lard into oil and tallow. There ought to be a number of the manufactories set up at once in Chicago, and every farmer who carries pork to market this coming fall and winter ought to purchase either lard oil or tallow, or both, and give it a fair trial. They will not be disappointed. By encouraging the manufacture of pork into oil and lard, and this coming into general use, and so much better and cheaper than sperm oil, it is reasonable for us to expect that the time is at hand when several thousand barrels of lard will be manufactured annually for that purpose. I feel confident of its being soon brought into general use in every part of the United States and the Canadas; and also it will be found a valuable article for exportation.

It is found, with pure alcohol, rightly managed, that 100 of lard will give 70 of pure oil and 30 of tallow; and the former is found upon trial to answer for all sorts of purposes to which sperm and olive oil have been applied, and this with great saving, even on machinery and wool. In New York, at a recent auction sale, several casks of the best winter strained oil sold only at 37½ cts. per gallon, while Lee's No. 1 lard oil sells at 50 cts. per gallon; and all this because the latter burns brighter and longer than the former. All the west may be considered a pork growing country; and it is for the interest of us all to be engaged in this business. We may say, Farmers of the west *vs.* The many thousand whale catchers of old Nantucket,—That they may *spout* and *blubber* as much as they please; the day for using sperm oil and candles in all the west is soon to be at an end. There will be no mistake in this thing.

MANAGEMENT AND APPLICATION OF MANURES.

Macedon, N. Y. Dec. 1842.

The first great requisite to successful farming is manure. In its manufacture and proper management, most of our farmers have yet to take the first step. Were these well understood and acted upon, the result would soon be an increase in the value of the farm products of this country of *many hundred millions of dollars.* Does this startle any one? Then let us make a brief calculation.

It must be familiar to most farmers, that our average products per acre, taking the country through, are not more than 15 bushels for wheat, 25 bushels for corn, 30 for oats, and 20 for barley. But agricultural societies and periodicals have sufficiently established the fact that these crops may be increased at least three fold. Wheat has often been produced here at from 40 to 50 bushels per acre; and three counties under the immediate influence of the Highland Agricultural Society of Scotland, have *averaged* 51 bushels per acre on land where but little was formerly grown. Corn is often raised at the rate of 100 to 130 bushels an acre; and with some cultivators, the annual product has for several years exceeded 100 bushels. These facts are established on undisputable testimony, and similar results have fallen under the direct observation of the writer and many others. Other crops have been increased at nearly equal rates. The chief cause of success in all these instances, is the fertility of the land, made so by manure. Now, the estimates founded on the census, make the amount of grain crops (excluding hay and roots,) in the United States, no less than 640,000,000 bushels; which at an average price of 40 cents a bushel, would amount to $250,000,000. If this amount were tripled, as it well might be by manure, it would be $750,000,000. But the real profit would be more than tripled, as large crops generally yield a much greater net profit than small ones. The increase in stock and manufactured articles, inevitably resulting from this improvement, is not taken into the account.

This subject naturally divides itself into three parts. The first includes the *materials* for manure; the second, the best modes of *using them* in making manure; and the third, the best mode of *application to the land.*

Of materials, one of the most abundant and universal is the excretions of animals. Straw, peat or marsh muck, pond mud, earth, sawdust and leaves, and lime, ashes, and plaster, are mixed with it, and serve to retain its volatile and liquid parts. Other substances exist in smaller quantities, but may sometimes be obtained in abundance, as bone dust, horn shavings, woollen rags, dead animals and other animal substances, all of which are of great value as manure.

A great loss occurs in common practice in not retaining the volatile and escaping parts of dung; a large portion is suffered to wash and run away; and a still larger part escapes in vapor or gas. By employing muck or peat in large quantities in admixture, this is mostly prevented; at the same time, a part of the materials of the dung convert the peat itself into powerful manure.* E. Phinney, of Lexington, Mass., and others, have found that two cords of peat and one of cow dung, mixed together, produce a compound as fertilizing as cow dung alone. Hence the greatly increased amount of manure which every farmer could make by large layers of muck or peat in his barn-yard, is obvious. But the successful use of peat

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* The limits of this essay preclude the chemical explanation of these various operations; and facts only are given which have been well established by experience.

does not always require dung. Ashes, leached or fresh, in sufficient quantity, will produce as good an effect. Sixteen bushels of good ashes are found to convert a cord of peat into excellent manure. The materials should of course be well intermixed, when they may be applied to the land in a few days. G. Robbins, of Watertown, Massachusetts, an extensive soap manufacturer, has a very productive farm, which he keeps in a high state of fertility, without the use of a particle of barn-yard dung. He keeps 11 horses, 4 cows, and 100 sheep; the manure from which is all carefully saved and sold; while the refuse or spent ashes from his establishment, mixed with peat, constitutes the sole enriching material for his land. The peat is dug in the fall, and the ashes, one-third the bulk of the peat, is applied in the spring and well dug over; and the whole applied to his fields. It is asserted that the animal matter of a dead horse, is sufficient to convert 20 tons of peat into more powerful and lasting manure than stable dung. Dr. Jackson states that one barrel of fish will convert a load of peat into very powerful manure. The value of one cord of peat or swamp muck, is considered equal to the dung of one cow for three months. Yet there are thousands of our farmers whose lands contain almost inexhaustible beds of this precious material, which is indeed worth a hundred fold more than all the southern gold mines; but which lies year after year untouched, while meager and diminished crops tell the poverty of the adjacent field.

In a very large part of our country, peat may be obtained for most farms, within the distance of a few miles at farthest; and may be drawn in winter on snow. If the distance is considerable, it would be a matter of economy to get it out early in autumn in heaps to dry, after which it becomes so light that large masses can be drawn at a single load. Freshly dug peat contains more than five-sixths water; but even then is no heavier than stable manure. Where peat swamps cannot be drained, it will be necessary in nearly all cases to dig it out in the dry part of autumn. But where draining can be performed, this may be done any time during winter. From a good locality it may be shoveled out with great rapidity; a man will fill a cart in a very few minutes. The presence of muck in swamps is readily determined by thrusting down a sharp pole, which will enter common soil only a few inches, but will penetrate muck many feet.

Where peat cannot be obtained, there are substitutes. Pond mud has been applied to land, and has doubled the products. It would certainly be not less efficacious when mixed with barn-yard manure. The application of rich soil or even common earth, would greatly assist in augmenting the quantity. Straw, abundantly used, is not a bad substitute for peat; although greater time is required for the reduction of the fibrous parts. Saw dust can be procured in many places in large quantities, and forms an excellent material for the absorption of the richer parts of stable dung.

The application of lime, ashes and plaster, is generally made separately to land. Both lime and ashes have produced astonishing effects when applied to soils whose sterility results from *sourness*, which quality is generally indicated by the growth of sorrel and broom-grass. Lands in the southern parts of New York, not yielding two dollars per acre a year, have by the use of 30 or 40 bushels of ashes to the acre, yielded the second year a net profit of more than fifteen dollars. Dr. Jackson states that blowing sand, or a pine barren, scarcely producing 10 bushels of corn to the acre, by a judicious application of ashes, has produced 40 to 50 bushels. Similar effects have been produced by dressings of lime, and shell marl on the worn out and almost totally barren lands of Virginia. The use of lime on fertile land, is in most cases highly beneficial, but not so striking, as a considerable increase in a crop already large, is not at once perceived. This has induced some to suppose that lime is of little or no use on rich soils; where the experiment has not been submitted to the test of accurate measuring. The quantity of lime per acre may vary from 50 to 500 bushels. If *hot* or *magnesian* lime, such as is generally used in the vicinity of Philadelphia, where lime has been extensively used to great profit, it should not exceed 100 bushels an acre. But land is not injured by common lime, applied much more copiously. The writer has known instances where it has been administered at the rate of 400 bushels to rich soils with decided benefit.

But in all cases, lime and other manures of its class, need thorough intermixture with the soil. Different experimenters state that its full effect is not produced until the third or fourth, or even the seventh year; which is doubtless owing to the fact that thorough intermixture has not taken place sooner. Failure often attends inattention to this particular, both in the use of lime and ashes. To facilitate the spreading of lime, it is generally covered with earth in small heaps until pulverized by slacking. It is not less efficacious when slacked, as it is obvious that a thin coating on the ground would in any case be very speedily saturated with carbonic acid. Hence old refuse lime from kilns, if not mixed with stone nor too much clottled to spread, and shell marl, are as good as any.

Ashes, applied to grass lands, in most cases greatly increase the crops, and is one of the safest and most certain ways to apply it unmixed.

But although lime, plaster and ashes are generally applied separately, a decided improvement consists in using them in mixture with barn-yard manure. They not only assist in retaining the valuable parts of the latter, both before and after spreading on the soil; but the thorough previous intermixture prevents those uncertainties which often result when they are applied alone. Bone dust, and other animal manures, are also most economically and safely applied to the dung heap. It is here that a great improvement in the use of these powerful substances is to be made.

Nearly all animal substances form very active component parts of manure. Hence fish, and all dead animals, animal matters from

slaughter houses, hair, &c., should never be suffered to waste. Covered with peat or earth, and a portion of lime or plaster, the volatile parts will be absorbed, little or no offensive odor will pass off, and manure of great power will be produced, when the decomposition is complete. It is stated that sixteen thousand dead horses are thus yearly converted into manure in Paris and its vicinity.

A most important material for manure, but generally entirely neglected, is night soil. Poudrette manufactured in the cities, consisting chiefly of night soil with peat, plaster, and lime dried, is of such efficacy, that one bushel is equal to a load of stable dung. The experiments of the writer fully corroborate this; and the mode he adopts is the following: A plank trough is placed under the privy, and frequent applications made of plaster, lime and ashes, (an addition of peat would be still better,) and when needed, it is drawn off, and applied either directly to the land or to the dung heap in the barn-yard.

The proper use and mixture of these materials, forms a most important part of the business. Stable dung is the chief material used by farmers; and the best mode of saving and using it, is one of the first requisites in good farming. The proper construction of barn-yards, hence becomes a matter of great consequence. A convenient plan for common use, is the following: A depression is made in the centre of the barn-yard, two or three feet deep, and from two to three rods in diameter; the adjoining stables being conveniently situated, so that all their contents may be daily wheeled and thrown into it. This depression should be water-tight, which will be the case if made of compact clayey soil. It would be better if paved with stones, the insterstices being filled with clay; or still better if they could be covered with a coat of water lime mortar. In the latter case, they would need to be kept covered in winter with manure, to prevent the mortar freezing and cracking. This basin serves to prevent the escape of all the liquid parts.

On the bottom of this, should be spread a layer of peat from six inches to one foot thick, if it can be obtained; and if not, pond mud, rich earth from mucky places, or common soil; or even a thick layer of old straw. On this, the cleanings of the adjoining stables, where litter should be freely used, is daily carried and thrown by a large boxed wheelbarrow, and the frequent treading of cattle's feet intermixes it well. Successive layers of peat or soil should be applied during the season. Peat, if piled in a large heap, will not freeze so much as to prevent frequent application in winter. Into this heap, also, all refuse animal matter should be thrown, the contents of privies be drawn, and occasional thin layers of ashes, lime and plaster, be spread, so as not to become accumulated in masses, but evenly mixed through. If this basin becomes too wet for cattle to walk across it, more straw and peat must be used to absorb the liquid. Plaster should also be daily strewed in the stables, and it will prevent the escape of much volatile manure.

Thus, by a free use of these materials, but more especially by a copious application of peat, muck and straw, it is believed that the manure manufactured by most farmers, would be increased at least ten fold.

The great labor, will strike many as a strong objection; but let them remember that this is laboring to some profit—far more so than scratching over barren fields and raising scanty crops.

One great neglect, even in farmers who otherwise take good care of manure, is suffering the urine of animals to waste. The preceding plan will save all from those in the yard. Those in stables should also be attended to. No stables should have plank floor, unless it can be made water tight. In this case, the urine is to be conducted in troughs at one end of the stables, into pits filled with peat or muck. The urine of a single cow for one winter, according to Dana, is sufficient to convert 20 loads of peat into excellent manure; and one peculiar value of the manure, is that it contains no more fibrous matter than the finest compost. It is generally best, however, to have earth floors, covered first with a thick layer of peat, and with another thick layer of straw. Sometimes loose floors are taken up once or twice in the year, and a bed of peat spread beneath.

APPLICATION OF MANURES. Common stable manure loses a large part of its value by fermentation. When it becomes a soft cohesive mass, one-third or one-half of its good qualities is gone. Hence when applied fresh to land and immediately ploughed under, its volatile parts are absorbed by the soil and loss prevented. The experience of many has led to a different result, who suppose that fermented manure is best. This is because the latter admits of thorough intermixture. But fresh or long manure is usually spread in large lumps, which are often imperfectly covered, and lie in large masses instead of being incorporated with the soil. Stones and unburned bricks thrown together, would form a poor soil indeed, but when ground down to fine sand and clay, they constitute a mixture like the basis of our richest soils. Thorough intermixture is the great leading principle in all chemical operations, and it must not be neglected in this. The following experiment by David Thomas, of Cayuga county, fully corroborates this position: He says, "in the spring of 1840, I had no ground for field beets, but a small lot where corn had grown for two years in succession. It was unfit for such a crop without manure; and I had only fresh manure from the stable, which has long been considered most unfavorable to the beet. My necessity, however, prevailed against opinion, and I took the responsibility. From each line where the beets were to grow, two furrows were turned so as to leave a wide dead furrow. Into this, manure was thrown from the wagon, each forkful touched the one just behind it, till the row was completed. It was well covered by turning two furrows together over it, which *held it down* while the harrow was passing four times in succession, breaking, pulverizing, and mixing it intimately with

the soil. Again, two furrows were turned together over the row, and the harrow passed twice more, in all six times. By this process, the ground was reduced to a fine tilth; and if there were any better beets in the country, I did not see them."

Hence also, one coat of manure ploughed deep, or one coat applied as top dressing, is only partially efficacious. Hence also, grass lands made rich by the culture of previous crops, are better than those made so by top dressing alone. A recent experiment of the writer, exhibits this principle in a strong light. Land not fertile was covered with a good coat of fine manure, and well incorporated with about three inches of the upper surface by repeatedly passing a cultivator. Ruta baga was sown on one part and Norfolk turnip on the other. For the first six weeks they made as rapid growth as the best turnips in the country; but after that, their growth almost ceased, and there was not one quarter of a good crop. Hence when such top dressings are applied, there should be a sufficient quantity of manure previously turned in deeper to carry on what is begun; and hence also, manuring in hills can only be of partial advantage. J. J. THOMAS.

Albany Cultivator.

VALUE OF PLASTER AND ASHES.

Mr. Enoch Hoit, a farmer upon Horse Hill in this town, informs us that in the summer of 1841, four acres of pasture land upon his farm were ploughed for potatoes—two acres for himself and two by one of his neighbors. Both parts were planted without manure. At the time of planting his own, a very small quantity of ground plaster was thrown into each hill; and after planting, less than a gill of ashes was thrown upon the hill as the potatoes came out of the ground. His neighbor made use of neither plaster nor ashes. In all other respects the two parts were treated alike. In the course of the season the difference in the potato tops was very plain upon opposite high ground more than half a mile distant. Two rows of each part side by side, were dug at the same time; when the hills where the plaster and ashes were used, produced two bushels for one of the ground where neither was used.—*Monthly Visitor.*

KING WILLIAM AGRICULTURAL SOCIETY.

Ayletts, King William co., March 1, 1843.

TO THE EDITOR OF THE FARMER'S REGISTER.

—By direction of the King William Working Agricultural Society, I hand you the address of Dr. Corbin Braxton, their president, and a condensed statement of some of the experiments reported by the members at the fall meeting. The copy of the address has just been received by me. Though late, I will add, our meeting was very numerously attended, considering the unfavorable weather, and premiums awarded on some animals, articles of domestic manufacture, and a crop of corn and French sugar beets, (which I deem it unnecessary to particularize,) and an interest excited in our county hitherto unknown.

Very respectfully your friend,

W. GWATHMEY, Sec.

DR. BRAXTON'S ADDRESS.

GENTLEMEN OF THE AGRICULTURAL SOCIETY OF KING WILLIAM.—At our organization in the spring, a resolution was passed, requiring that I, as the president of this society, should deliver an address at this, our fall and annual meeting. While, at the same time, I do not mean to draw back from that or any other call of the society, I can but regret that the task had not devolved on some more efficient or able member, on one better calculated to throw light upon the noble science of agriculture, and to elicit that attention to the subject which it so loudly calls for at our hands. For let others, who may think they occupy higher ground in the scale of science, sneer as they may at the humble vocation of the tiller of the earth, I contend that it is the first of all sciences, and the most noble of all vocations.—By it, and it alone, can any country rise high in the scale of nations. It is by a prosperous agriculture that the arts flourish, that commerce can be successful, and by which the couutry can be enriched; it is, in short, the foundation upon which all other superstructures of national prosperity must be raised. Yes, gentlemen, it is a noble science, and I rejoice that enough public spirit has been found among us to form an agricultural association; and I trust, nothing doubting, that if the objects of our society are properly carried out, as our constitution requires, much good will result, not only to ourselves as individuals, but to our country. It is by associations like these that a common fund of scientifiic and practical knowledge may be attained, which could not be by individuals, and a spirit of emulation excited which could not be where no association existed. But I am constrained to say, that I do not think that agricultural societies conducted upon the principles upon which they have usually been in eastern Virginia will or can be productive of much good. For agricultual societies to do good, they must be working societies, each individual member must bring his modicum of practice, experience and experiment, and throw it into the general fund, which will form not "a mountain of misery," but a fountain of practical information, from which all may drink; and if, as I trust, we shall all profit by the association, and improve in our agriculture and husbandry, others, seeing our good works, may profit thereby, and thus all our country be improved. Example works better than precept, and our fields, which are now reflective of poverty, may become animated with lowing herds and bleating flocks, and seeming to labor under the weight of luxuriant crops of grain and grass. This, gentlemen, is not a fancy sketch; for, although far too much of our

country exhibits but a poor feast to the eye of the patriot or the improving farmer, still I am happy to believe that the means of resuscitation are within our grasp, and that the work is already onward in its march, and that, by proper exertions on our parts, it will be onward; and that the piny old fields of eastern Virginia, which have so long been a reproach to us, and a by-word of the more favored regions of our country, shall disappear, and in their stead rich fields of waving grain, luxuriant grasses, with neat and tidy houses and homesteads, and all other insignia of comfort and plenty, for man and beast, shall every where appear, to gladden the eye of the traveller, the patriot and the owners. I need not go farther to prove that the work of improvement is begun, than merely to recall to the recollection of every gentleman present (who is old enough for the reminiscence) what many portions of this county were some ten, fifteen or twenty years ago, and what it is now. For, although much remains to be done, something has been done, the great work of improvement has been set in motion, and I trust it will move onward with an accelerated velocity. It gives me pleasure to contrast the period I practised medicine in this vicinity, (some 15 or 20 years ago,) when all was barrenness and waste, with the past summer, when my eyes were greeted by luxuriant fields of wheat and corn, and lands which, perhaps when I last saw them, were the homes of broom sedge, and hen's grass, and a nursery of young pines, were then fragrant with the smell of red clover, inviting the contented quadrupeds to eat and be filled; for plenty gives contentment every where. With the improvement of no farm was I more struck or pleased than with that of our worthy host, at whose house we now are. I really think too much praise cannot be awarded him for the rapid improvement he has made in the short time he has been its owner and occupant. And, indeed, I trust the same spirit is every where manifesting itself among us, and will be attended with like good results, whenever equal industry and skill are applied.

Our county presents many varieties of soil, from some that is naturally good to a great deal that is naturally very poor; and, although we may say that a great majority of our lands, like ourselves, were born poor, still an all bountiful providence has not left us without many advantages as an agricultural region. Our soil, whether rich or poor, is adapted to, and capable of yielding almost every variety of product fit for the sustenance of man or beast, whether it is of grain, grass or roots; and a never-ending variety of fruits, adapted to every season, with a mild and benignant climate, where we have only to provide winter feed for our stock for four or five months—a soil of easy cultivation, with a navigable river on either side of us, within five or six miles of every man's barn, with our metropolis within fifteen miles of our borders, with its increasing consumption inviting all our surplus products. Superadded to all these advantages, God, as when he turned our first parents out of the garden of Eden, did not leave them without the means of returning to himself, so, in making our lands poor, has not left us without the means of enriching them to any desired extent; for, however uninviting the surface of our unimproved lands may appear, we have below, emboweled in mother earth, an unfailing supply of the richest *manures*, which, when sufficiently applied, with proper after cultivation, will not only enrich our lands, but give them an increasing fertility through all time.

These, gentlemen, are surely advantages, not every day or every where to be met with, and that should not be lightly regarded. The citizen of the tide water region should ponder it well before he leaves his native land to seek a home in the unknown west. He should recollect, too, that he who fails to profit by the great advantages he here enjoys, can hardly expect to realize greater in a new and unknown land. It is harldly necessary for me to say, the manures alluded to above are the rich deposites of fossil remains so lavishly distributed in a large portion of our county. It is needless for me, gentlemen, to enter into any disquisition at this time, upon the subject of the adaptation of marls (for so our fossil deposites are called) to our acid soils—time and space would fail me, if your patience did not. On that subject I must refer you to the 'Essay on Calcareous Manures', which, I think, should be in the hands of every farmer, and should be read and studied until all its principles are as familiar as his alphabet. For, after all that has been, or may be said, about book-farming, it is only by science, rightly applied, that industry can reap the full reward of its toils. It is by science that all the arts have attained their present altitude; it is by science that principles have been correctly applied to things in all departments of physics, and nothing has been more benefited by its correct application than agriculture. We should not sneer at the book-man because he is not a practical operator; for it is his province to point the defects of soils and the remedies, and ours to apply these remedies. To the author of the 'Essay on Calcareous Manures' too much praise cannot be awarded. He has brought about a new era in agricnlture; he has given new birth to all the tide water region of the whole Atlantic country. Scientific men call him brother; and his name is already enrolled on the pages of history as one of the benefactors of mankind. He has given us the bane and the antidote; he has pointed out the defects of our soils and the remedy, and shown that it was within the reach of nearly all. To the good effects of calcareous manures, that is, of marl, lime and green sand, I can bear ample testimony, from an experience of some ten years; and I have never seen them fail to do good unless when the stronger marls have been applied too lavishly; in which cases it has for a time destroyed the producing powers of the land, but always restored an increased product after the application of a sufficiency of putrescent manure. Were I asked to which of the marls I give the preference, from my experience, I would unhesitatingly say the eocene or green-sand formations; for, although they contain much less lime than the

miocene marls, still the effects of the green-sand marl are much greater, whether on grains or grasses, or roots, or the after appearance of the soil. I think, from my observation of the action of the three calcareous manures mentioned above, that the difference in favor of the eocene over the miocene marls is the same as that of the miocene over the common carbonate of lime. This difference in favor of the green-sand marl, I am unable to account for. I cannot say whether the enriching principle is in the green-sand, *per se*, or in something connected with the deposite. Chemists tell us that it is the silicate of iron and potash, but geology is obscure as to its formation—whether it is a purely mineral, animal or vegetable substance, or whether it is a vegeto-animal substance, or whether it is a triple compound, we cannot tell. The whole subject is wrapt in obscurity, and we must wait patiently upon science for a developement of its formation. The difference of action in favor of the miocene or white marl over the carbonate of lime, is readily accounted for by the presence of the animal remains in the marl beds, which causes it to act more speedily and more efficiently as a manure. Leaving these matters to wiser heads than ours, let us pass on to something of a more practical nature. It is said that it is essential, in order to make an acid soil a good one, to add some calcareous matter to it. Let us then inquire at what cost a farmer might afford to use lime or marl. I do not know that I can answer this question satisfactorily, but this, I think, I can safely say, that any farmer may go to double the cost hitherto expended in our county in the application of either lime or marl, and be well repaid for the outlay. I should not hesitate to haul good marl, containing 75 to 90 per cent of lime, ten miles, if it could not be procured nearer, or to give 16 to 20 cents for lime, if it could not be had cheaper. Speaking from my experience, I should say that moderately stiff lands were much more easily improved by marl than the very light soils. I have found that the most sandy soils upon which I have operated, required more marl to enrich them than soils containing more clay, and that an addition of putrescent manure and good trampling was necessary to make such soils rich. A piece of land of this description I had marled twice, at about 200 bushels each dressing, with a gray marl containing very little green-sand. The land did not show any great improvement. I then gave it a dressing of green sand, 200 bushels to the acre, and manured it partly by cowpens and partly by putrescent manures hauled on. I have taken two crops of corn since off the land, which yielded about 10 barrels per acre; previously to marling two barrels would have been a good crop. The first step, I should think, in all judicious systems of husbandry would be to establish a good rotation of crops. Upon this subject I believe farmers differ almost as much as the soils they cultivate: and it is equally true that different soils and locations require very different rotations, as it would certainly not be judicious in a farmer living on navigable water, with a light sandy soil, to pursue the same rotation as one in the interior, remote from navigation and occupying a stiff clayey soil. Again it might require a very different rotation to renovate an exhausted soil which was originally poor, from that which would be necessary to maintain a soil already rich, and which was so originally. But this I think may be laid down as a safe rule, if not as an axiom, that no land ought to be put in grain cultivation, more than half its time, that is, more than one grain crop should not be taken from land in two years, or two in four years, or three in six years; and as a codicil to that axiom, I would say, wheat should never follow corn, corn follows wheat very well, and oats succeed corn pretty well. But I would say, let clover follow corn without any grain crop whatever, as I believe the notion that it was necessary to have small grain to shade the young clover is now pretty well exploded; as every observant farmer must have noticed that wherever the fly had destroyed his wheat, the clover was much better than where it had been shaded and protected as they call it, by a luxuriant growth of wheat; and that when the wheat was very luxuriant, the clover was generally killed. Beyond these suggestions, I will have every farmer to stumble upon that rotation which he may deem best suited to the condition and situation of his farm, and if he keeps the above rule in view, I do not think he will establish a bad one. But of this fact I am certain that no worn out lands will be speedily renovated under what is called the 3-field (or shift) system; that is, 1st. corn, 2d. wheat, 3d. close grazed. That barbarous system, gentlemen, must be abandoned; whether we use calcareous manures or not, your lands will never grow rich under it. You must elongate that rotation and you must give more attention to the grasses, before you can hope for a profitable return for your labor. I am happy in believing that an increased attention is being paid to the cultivation of artificial grasses, and especially to that king of the tribe, red clover, of which I believe there is now sown in this county a bushel of seed for every ounce that was 10 years ago. Still we are but in the infancy of that branch of husbandry; as science and every day's experience are proving to us, that that must be the basis of all good farming. We are too greedy, we go for killing the goose, we cultivate too much surface in grain and too little in grass. All agricultural histories, both ancient and modern, prove that, in proportion as that branch of husbandry has been attended to, that district or country has improved, and the proprietors have become independent, prosperous and happy. Upon the subject of manures too we are greatly deficient; we neither make as much as we ought or can, if we were properly to use the means attainable for that purpose; and it is doubtful whether most of us apply what we do make in the most judicious manner. My own experience goes directly in favor of top dressing the year previous to the field coming in cultivation, whether of wheat or corn. But as a most judicious farmer and friend of mine says, "put it on in every and any way you can, it will all do good." Still

there is a right and a wrong way of doing every thing, and if we can ascertain the right, that is certainly the way we ought to pursue; we all cultivate our farms imperfectly; we have not labor sufficient to do that perfectly which we attempt, and therefore our farms are poorly cultivated, but little improved compared with what they might be, and we are but poorly compensated for our labor. All these things, gentlemen, must be changed, before we can arrive at that degree of agricultural improvement and prosperity to which our climate, soil, and location entitle us. I am not an advocate, as most of you know, for an entire exclusion of the hoof. I think it essentially necessary upon our soils, that the fields should be subject one year at least in the rotation to the grazing and trampling process, whatever might be the rotation decided on, supposing it not less than the four field. I would give the land the entire benefit of the clover crop the first year, and graze it until it was fallowed the next for wheat in the fall. I am a decided enemy to all weeds, and would have none of them for any purpose. I believe they take from land as much or more than they give. Not so that most valuable of all grasses, the red clover; one good coat of that I think is fully equal, if not superior, to any dressing of putrescent manure we can give our lands, and the only way I know of, by which we can extirpate weeds is, where the land will bring it, to keep it so thickly set with clover as to smother all things else. By so doing, I believe it will eventually overcome the blue thistle, the worst of all pests except the magothy-bay bean.

Having already extended those remarks, perhaps farther than may be pleasant or profitable to the society, I will conclude by exhorting my brother farmers to be not weary in well-doing, but to meet every returning season with an increased energy and zeal in the noble cause, and would have them put in mind of the good old proverb, "that he who withholdeth not his hand from the plough, shall not want bread;" and that it is by patient and persevering industry, that we can hope for good results. But with these, and a proper direction of labor and means, with God's blessing, we may hope for all things, and certainly the doubling and tripling of the product of our farms.

Lewis Littlepage's experiments.

1. Impressed with the opinion that fall fallowing for corn was more injurious to the land than spring, about 25th March this year I prepared the land and planted in corn, which proved a very short crop. The fallow was in clover, the cut worm was very destructive. My conclusion is that the loss of corn is greater than the benefit to the land proportionably.

2. The rows on which corn was shocked in my wheat field were sown in oats in spring, and clover seed sown over the field. That on the oat rows grew much more luxuriantly, and when the same field was fallowed for wheat, the effect was very apparent in that crop also.

G. R. Traut's experiments.

1. Soaked seed corn in copperas water 2 days, (half pound to the gallon of water.) Was not pulled up by crows or destroyed by cut worm. Other corn adjacent without copperas was destroyed.

2. In 1841, sowed clover seed after corn the last time it was worked. They came up and the crop succeeded very well.

Corbin Braxton's experiment.

1. Planted harvest beans, which did not mature in time for ruta-baga.

William S. Fontaine's experiments.

1. On harrowing in clover seed the last of March on wheat, alternate rows were left unharrowed. The wheat to the eye for a fortnight appeared benefited. The clover to this time is better set.

2. Ten acres of purple straw wheat was cut, in the dough state. Product about 60 bushels, very much shrivelled, and unsaleable, if it had not been mixed with the rest of the crop. Ten acres rather better land, fully ripe, gave me 82 bushels of wheat, plump to the eye, and weighing 57 lbs. to the bushel.

From a partial experiment, I am induced to believe that wheat after corn produces more in single beds than double.

John O. Turpin's experiment.

On keeping sweet potatoes. After digging your potatoes, they should lie three or four days in a warm room that they may go through a thorough sweating process before putting them away. The sweating must take place; if it takes place before the vegetable is put away, the air will carry off the moisture, but if it takes place in the confinement of a potato cellar, freezing and rotting will be the inevitable result. The custom generally prevails of putting them away immediately on digging, and but few persons have potatoes after Christmas. The plan I recommend I tried last year. I had good potatoes as long as they lasted, to the 1st of May. It may not be improper to add, the cellar should be perfectly dry; and there should be a layer of pine leaves and a layer of potatoes. If I mistake not the process of sweating is observed throughout Georgia, where this vegetable is raised in great abundance.

Edward Hill's experiments.

1. On peas planted with corn: 2 rows of corn planted in peas, every other hill yielded by accurate weight one pound of corn less than the two next adjoining without peas. Considers the peas a clear gain.

2. On drilled wheat. An acre drilled 9 or 10 inches apart, cut and thrashed carefully, yielded only a few gallons more than an acre sown broadcast immediately adjoining. Considers it not worth the additional trouble of drilling.

Richard Gwathmey's experiment.

Discovering rust in his late crop of wheat, he commenced harvesting and continued 6 days. Having carefully stacked the first and last day's cutting separately, he selected a dozen bundles from each and thrashed them; and on weighing, he found the product of the first dozen to be three quarters of a pound heavier. He afterwards sowed 10 grains of the green parcel, each of which sprouted readily and put up a vigorous spire.

William Gwathmey's experiments.

1. In the spring of 1841 having a piece of low land with black and light soil much infested with sorrel, I had it limed at the rate of 150 bushels of shell lime per acre, to ascertain if it will destroy the sorrel. The crop of corn was but a moderate one, and the sorrel quite as luxuriant as before. The land was covered at the time of applying the lime with a pretty good cover of natural grass, dried of course by the winter. This year the same piece of land was again cultivated in corn, and after it was several inches high, good stable manure was liberally applied on the surface, beginning some distance from the limed land and passing half way across it; so that I had contiguous a strip dressed with lime alone, one with lime and manure, and a third with manure alone. The crop received the same cultivation and the product was as follows; six rows with lime alone produced 763 ears; measuring 7 bushels. 6 rows with lime and manure, produced 1000 ears, measuring 10 5-8ths bushels. 6 rows with manure alone 777 ears, measuring 7½ bushels.

Showing that lime will not kill sorrel; and that while mixed with manure it greatly increases the product; alone it is not equal to good manure in the first crop at least.

2. To ascertain the effect of covering up the vines in cultivating the sweet potato, I had the vines covered in two rows, and designated by a stake. The two rows adjoining planted with similar seed and cultivated as the crop, with the earth drawn up, leaving the vines uncovered, yielded 3 pecks more of larger potatoes.

MAKING VINEGAR.

Sandy Spring, Md. 12th mo. 17th, 1842.

Messrs. Editors.—S. E. T. inquires in your last No., how to make vinegar, and you inform him, and your way is doubtless a very good one; but I can tell him how to make first rate vinegar, with very little trouble: Take a cask of any size, I prefer a large one, fill it about one-fourth to one-half full, and never to exceed that; place it in the open air, or in the chamber, or cellar. If the *air* can pass over it, fermentation will soon cease; it will lose its spirit, or deaden as some express it, and be first rate vinegar. *Never let your cask be more than half full.* I never knew good vinegar made in a full cask. As you draw out, fill up with cider, and you may always have a supply. Never bung up the cask. I make a practice of cleaning my casks of mother occasionally, and never would I add any to the vinegar. Vinegar makes mother, but mother *does not make vinegar.*

A CONSTANT READER.

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RESPECTED FRIENDS.—I can give S. E. T., a receipt for vinegar, that is infallible. To every barrel of cider, add one and a half gallons of good whisky; it will give it strength and body, and the change will speedily be wrought.

Cultivator. R. T. BENTLEY.

A CHEAP PAINT.

Take one bushel of unslaked lime and slack it with cold water; when slacked add to it 20 pounds of Spanish whiting, 17 pounds of salt, and 12 pounds sugar. Strain this mixture through a wire seive, and it will be fit for use after reducing with cold water. This is intended for the outside of buildings, or where it is exposed to the weather. In order to give a good color three coats are necessary on brick, and two on wood. It may be laid on with a brush similar to whitewash. Each coat must have sufficient time to dry before the next is applied.

For painting inside walls, take as before, one bushel unslacked lime, 3 pounds of sugar, 5 pounds salt, and prepare as above, and apply with a brush.

I have used it on brick, and find it well calculated to preserve them—it is far preferable to oil paint. I have also used it on wood, and assure you that it will last longer on rough siding than oil paint will on planed siding or boards.

You can make any color you please. If you wish a straw color, use yellow ochre instead of whiting; for lemon color, ochre and chrome yellow; for lead and slate color, lampblack; for blue, indigo; for green, chrome green. These different kinds of paint will not cost more than one-fourth as much as oil paints, including labor of putting on.—*Ontario Freeman.*

TO STOP BLEEDING.

J. H. Young, in the Albany Cultivator, says: "A few years ago, a valuable carriage horse of mine, took suddenly ill on a journey. A professed farrier in the village in which I was compelled to stop, advised bleeding in the mouth, which was done accordingly. But unfortunately, after the animal had bled more than a gallon, it was found impossible to stop the blood. We all thought the horse would bleed to death. At this crisis, a farmer happened to pass by, and directed an application of the *fresh excrement of swine.* A small portion of this was immediately held on the wound made by the farrier's instrument, and in two minutes the blood was completely stopped. I have tried this simple, though not very pleasant remedy, several times since, in similar cases, and with the same remarkable success."

BOMMER'S METHOD OF MAKING MANURE.

We invite attention to the annexed Report of Dr. Beck, on Bommer's method of preparing manure. From a careful examination of the specifications and directions furnished us by Mr. Bommer, as well as from a personal examination of the process, from the forming of the heap to its opening we are convinced that the method must prove valuable, and the manure so prepared, of the best quality. There are many farms on which immense quantities of coarse grass, thistles, sedge, flags and other weeds, are annually grown, of which no use can be profitably made; all these, and with them the large piles of straw which are heaped round many barns to cause them to decay, may, by this method, be expeditiously and cheaply converted into the best of manure—the cost of the materials which the farmer will have to purchase being only fifteen to twenty cents per cord, and the labor only such as is necessary to form a compost heap of any kind.

Report on Bommer's process for making vegetable manure by fermentation.

At the request of Mr. Bommer, the undersigned were present on the 14th of September, at the preparation of the materials used by him for making the above manure. As Mr Bommer's process is patented, it will of course not be expected that the committee can go into details farther than what he himself makes public. They have, however, no hesitation in stating that the materials mentioned in his specification were all used; that the experiment was in every respect fairly made; and that the whole is evidently conducted on the most approved chemical principles.

Two heaps were prepared; the first made of dry materials, principally straw of various grains, and probably weighing 1000 pounds; the second was composed of ligneous vegetables, dry and green—such as cornstalks, potato stems, thistles, and various other weeds. This weighed probably about 450 lbs., and was propped against the first heap.

The following table was kept at the request of the committee. It exhibits the degree of heat developed during the process of fermentation, ascertained daily by immersing the bulb of a thermometer in the centre of each heap.

FIRST HEAP—DRY STRAW.

	Dgs.
Sept. 15, At 6 o'clock, P. M.	76
16, At 7 o'clock, A. M.	87
At 6 o'clock, P. M.	90
17, At 7 o'clock, A. M.	95
At 6 o'clock, P. M.	98
18, At 8 o'clock, A. M.	103
19, At 5 o'clock, P. M.	95
20, At 7 o'clock, A. M.	102
At 6 o'clock, P. M.	107
21, At 7 o'clock, A. M.	113
At 6 o'clock, P. M.	117
22, At 7 o'clock, A. M.	126
23, At 10 o'clock, A. M	112
24, At 10 o'clock, A. M.	123
25, At 10 o'clock, A. M.	137
26, At 10 o'clock, A. M.	152
27, At 10 o'clock, A. M.	116
28, At 9 o'clock, A. M.	122

SECOND HEAP—GREEN STUFF.

	Dgs.
Sept. 16, At 6 o'clock, P. M.	80
17, At 7 o'clock, A. M.	109
At 6 o'clock, P. M.	127
18, At 8 o'clock, A. M.	161
19, At 5 o'clock, P. M.	136
20, At 7 o'clock, A. M.	152
At 6 o'clock, P. M.	161
21, At 7 o'clock, A. M.	173
At 6 o'clock, P. M.	178
22, At 7 o'clock, A. M.	184
23, At 10 o'clock, A. M.	142
24, At 10 o'clock, A. M.	157
25, At 10 o'clock, A. M.	182
26, At 10 o'clock, A. M.	201
27, At 10 o'clock, A. M.	138
28, At 9 o'clock, A. M.	146

The fermentation was discontinued Sept. 28, when the heaps were opened for exhibition. The committee examined them on the 8th of October, and are quite satisfied that the result is a satisfactory one. The heap formed of 1000 lbs. dry straw was found to contain by measurement 225 solid feet, or one cord and three quarters, estimated to weigh 4000 lbs. The material furnished must prove a valuable manure, and the more so, as it employs many articles now worthless or deleterious. In all matters of this nature, experience is of course worth more than mere theory; but it will be a matter of great disappointment if a process combining, as this does, an application of the most correct chemical principles, with the employment of the most efficient agents does not in time become a favorite with the farmer. T. R. Beck, Chairman.

Mr. Bommer states in his prospectus that the merit of his method essentially consists in the four following important points:

1. In being able to reduce in a short time all kinds of straw and ligneous weeds to a rich, unctuous and durable manure, such as wheat straw, barley, rye, buckwheat, and other black grains; stalks of Indian corn, rice, and other plants; dried or green potato tops, leaves, stalks, and roots of all kinds of plants; green or dried reeds, green rushes, sea weeds sea rushes, heather broom, stubble, in fact every thing belonging to the vegetable kingdom, and a great many other things lying about the farms, which are often allowed to go to waste. Even the ground itself may be converted into the best of manure or compost.

2. In the combination or alliance of fecundating substances, the use of which when separated would not and could not produce the desired effect.

3. In the production of a very considerable quantity of facticious water, which when combined with other ingredients, forming lees, furnishes the farmer with a fertilizing liquid, the commixture of which in either vegetable or mineral substances, gives a manure of the richest kind.

4. In the production of a quantity of nitrate of lime and caustic potash; of ammonia and saltpetre—four substances which modern chemistry has found to contain the most fecundating properties possible.—*Albany Cultivator.*

MANURES.

Denmark, Lewis co., Feb. 6, 1843.

Messrs. Editors.—It becomes us in this enlightened age to look to our ways, and if there is any method which tends to improve or augment the productions of any branch of industry, most surely should it be received and practised. It has been, and still is, a matter of regret that the farmer should be so backward to receive the truths which science and close observance have brought to light; but if appearances are not deceitful, that backwardness is slowly being removed. Well has it been said, that "manures are the farmer's riches." But how little pains are taken to husband those riches; no one can reasonably expect a succession of good crops, without them.

If manures are so necessary for good husbandry, why is it that they are so much neglected, and allowed to waste? It may be considered a broad assertion, but it is none the less true, that not one in a thousand in the state of New York, properly saves those manures in common use, namely, the solid excrements of animals.

But it has been shown by experiment that liquid manures, which are every where allowed to waste, are equally beneficial when applied to plants. The Chinese apply liquid manures, almost entirely to vegetation, and in no country has agriculture reached that degree of perfection; as there, scarce a weed is to be found on the land, and in their fields of grain, naught but grain is seen; which is, in a great measure, owing to the fact that they do not carry on to the land, in long or barn-yard manure, an immense reservoir of the seeds of grain, noxious plants, &c. Liquid manures, it has been proved by direct analysis, do contain, in large quantities, those ingredients which are not only highly nutritious and stimulant, but in the state to be most easily absorbed by plants.

It would be but little expense for the farmer to prepare his stables so as to collect this kind of manure, and convey it to a large reservoir, so covered as to prevent evaporation, and there saturate it with earth, or apply it to vegetables in the liquid state. It is considered best for grass lands, and to such it may be applied, if liquid, by placing a large hogshead or some other vessel, on a cart, fill it by means of a pump, then cause it to flow into a box four or five feet in length, the bottom pierced with holes, then by drawing over the ground, it is distributed evenly and with little trouble. A cow, in five months, discharges urine sufficient as manure for half an acre, of the richest quality and of the most durable kind. The excrements of a healthy man, solid and liquid, are sufficient in one year to nourish the most exhausting crop on one acre of ground, and yet neither of these manures are applied to the soil, save what little of the former may be absorbed by the litter of the barn-yard. The most convenient method of securing the liquids of the barn yard, is by causing the yard to descend towards the centre; and absorb them with straw or other litter, a means of which most are acquainted. I would not neglect the solid manures, to preserve those that are liquid, but both can be saved, and both should be. If all the manures which are in the power of every farmer, were properly husbanded, and applied to the soil, one great step would be taken to advance the agricultural interests of this country—farmers would reap better crops, and that portion of our country which has been "worn out," might again be made to yield plentiful harvests.

The agricultural community, as a mass, do not take sufficient interest in improving the mind, and as long as the most essential part is left uncultivated, the science of agriculture will not move on with rapid strides towards perfection; neither will they apply the principles which have been brought to scientific men, in such a manner as to be beneficial, though if rightly understood by men who had studied and seen the beauty of them, would greatly advance this valuable science. Every farmer can at least do this, take at least one paper devoted to his interests, and form a little library of agricultural books, to read at leisure hours; he can procure some choice volumes on this subject, and will therein find many valuable hints, doubly worth the price they cost. Yours, &c. G. B.

Central New York Farmer.

CORN CULTIVATED FOR THE STALK AND LEAF ALONE.

Savannah, March 14*th*, 1839.

Mr. Editor,—The high price of labor is producing an important change in our system of agriculture. From our cotton plantations, the old treadle gin is disappearing, and an improved roller horse gin is supplying its place. Upon rice plantations, the thrashing machine, impelled by steam or animal power, is gradually expelling that remnant of barbarism, the flail stock. Although the high price of labor is a matter of regret, its tendency is to make us better agriculturists. It calls for a greater sagacity, as well as a more rigid economy, in the management of business. It makes us more saving of labor, and more careful of the health of the laborer. It leads to the adoption of labor-saving machines, and to the gradual substitution of animal power for human power.

The maintenance of the animals introduced by this change of system, is a practical question of great importance, and upon this point I propose to submit a few observations.

It is believed that the average crop of corn and oats in Georgia and South Carolina, does not exceed twelve bushels per acre. Upon

this, and the fodder gathered from the corn, we place our dependence for the sustenance of the animals employed in our agriculture. To produce a sufficiency, we are compelled to enlarge our plantings of these exhausting crops, and we devote to these purposes land already impoverished and requiring rest. Among the ultimate consequences of such a system, are abandoned plantations and emigration. To mitigate this evil, and to assist in the maintenance of our animals, I propose a fodder patch, that is, the cultivation of Indian corn expressly for the stalk, and not for the ear or blade. I propose this stalk fodder, not as a substitute for grain, but as a valuable auxiliary—rendering, in fact, the grain given more efficacious, and enabling the animals to do with less. For the last six years, I have devoted to this purpose a small lot of land, and I estimate the product so highly, that nothing would induce me to abandon the culture. At the usual corn planting season, this lot is trenched four feet apart, with a bull-tongue plough, and in these trenches we sow the common Indian corn, at the rate of two bushels and upwards to the acre. During its growth this corn receives two or three ploughings, and this is all the culture it gets—it is neither hand-picked or hoed. At every ploughing, the earth is thrown fearlessly towards the corn, which would be buried and destroyed, were it not that the mass of plants, growing in the trenches, enables it to resist the pressure of the earth thrown against it. By this treatment, every particle of grass growing at the root of the corn is completely destroyed.

When the fodder corn begins to tassel, we begin to use it, and not before. The reason is manifest. It is a well known law of vegetable life that when plants are in bloom, then their mucilaginous, saccharine, and nutritive properties, are most fully developed. This is proven by the fact that if herbs be gathered for distillation, or grass be mown for hay, before the appearance of the blossom in both instances, they yield no valuable products. To this law Indian corn constitutes no exception, and hence our reason for waiting until it tassels before we commence using it. If gathered before that time, my persuasion is that the stalk is of little or no value.

We wait, then, until it tassels before we begin to use it. The ploughman, with a short scythe or sickle, cuts it up at the root, takes it by large armfuls to the cutting box, and when cut, it is mixed with chopped oats, and given to our working animals. I feel satisfied, when a sufficiency of this chopped corn stalk is mixed with their oats, that plough horses and mules will do with one-third, perhaps one-half less grain. Besides, while using it, no other forage is required, and this is no trifling convenience. When planted at the usual season, the fodder corn begins to tassel about the 20th June. It comes in at a time when there is frequently a pressing necessity for fodder—when the ploughs are in full action—when animals require food of the most nutritive kind, and when frequently the blade crop of the preceding year is totally exhausted.

We continue to use this fodder corn as long as it lasts, and it has this great recommendation, that the longer it stands, until actually killed by frost, the more palatable it appears to become to animals. After the tassel has dried up, when every blade hangs down, and has become colorless, when in fact from external appearance, we would pronounce the plant actually dead, the stalk will be found to be perfectly green. I have satisfied myself of this fact, by repeated observation. I have gone into this fodder patch for several years in succession, as late as the middle of October, and have invariably found the stalk of the corn green and more rich in its nutritive properties, than at any preceding period. The juices of the plant, after being elaborated in the leaves, appear to be concentrated in the stalk, and it contains at that time so much saccharine matter, that it approximates its taste to the upper joints of the sugar cane itself. That this protracted vitality of the stalk is owing to the fact, that the plant is never deprived of the blade, I have not a shadow of doubt. At the very time in October when I found the stalk of this fodder corn green, crisp, and juicy, the stalks of the crop corn from which the fodder had been gathered at the usual season, were dried up and dead. I infer from these facts that the early gathering of fodder is a pernicious practice—because by impairing the vitality of the stalk of the corn plant, when in the very act of perfecting the ear, it necessarily interferes with the complete maturity of the grain. I advance this as no novelty, but only to reiterate an important agricultural truth. It has been demonstrated by repeated experiments among the farmers of the middle and northern states, that "topping corn" seriously diminishes the amount of the crop. By parity of reason, the abstraction of the fodder before the maturity of the grain, must be attended with consequences proportionably injurious. It is the general impression of planters, that the ear of the Indian corn is completely matured at the time of gathering the fodder, and hence that no injury results from taking away the blade. I greatly doubt the correctness of this impression; Indian corn being an annual, the whole energies of the plant are directed to the perfection of the ear, all the other parts of the plant are but the ways and means provided for the accomplishment of this end. Now, it seems to me reasonable, and probable, that as long as the leaves and stalks remain green, they continue to impart something of value to the ear. The strong sympathies which are known to subsist between the ear, the stalk and the blade, go to confirm this opinion. If the green ear is destroyed by a squirrel, the leaves of that plant soon become discolored, and it prematurely dies. If the blades be stripped when the corn is in mutton, the stalk perishes, and the ear is shrivelled and light. You can mutilate no one part of the plant, without inflicting serious injury on the other two.

Could we abandon the gathering of fodder, we should in many respects be greatly the gainers. The plant would escape mutilation, and consequently the ear would be completely

perfected; the grain would be plump and heavy; would measure further, and fatten more. Besides, there would be the gain of time. There is no work done on plantations, which makes so poor a return for the labor expended. I have heard practical men say that a smart man will, with a scythe, cut a greater weight of hay in a day, than any five hands can gather in blades. As far as my experience goes, this falls short of, rather than exceeds the truth.

But the question is asked, What shall we use in lieu of blades? My answer is, we have more land capable of yielding hay than we imagine. Upon every plantation there are low grounds, shallow ponds, and patches of swamp, devoted commonly to rushes, brambles and gum sprouts, which, if drained and ploughed, yield handsome crops of hay. Our ordinary highlands produce tolerable crops of grass, if cow-penned and ploughed. Another resource is that of cutting the grass which springs up on our stubble lands, from which crops of small grain have been taken. Another source of supply would be this fodder corn I am recommending. Two or three acres of good land appropriated to this purpose, would furnish a large supply of forage. The corn might be cut and stacked in the fields, as is the practice of the farmers of the middle and northern states, and this might be done at any time in September or October, as would best suit the convenience of the planter.

Fodder diligently gathered from these sources, would at least enable us to dispense with a part of the blade crop. The stripping might be postponed until the blades below the ear were dead. By that time, the grain would be so far matured, that it would suffer far less than happens when every blade is green at the time of gathering.

I have never yet ascertained the weight of an acre of fodder corn, but have no hesitation in saying that it is very great. One acre of good land will furnish an abundance of forage for four horses for three months. Mules appear to be especially fond of it, and cows running upon ordinary pastures, will, if fed with these chopped corn stalks, double the butter in a few days.

It is well known that the average crop of corn of the middle and northern states, exceeds our own, and that this arises not so much from superiority of soil, as from the number of stalks they are able to crowd upon an acre. With them, the corn plant does not attain a height of more than seven or eight feet, while with us it is not uncommon to see stalks fourteen feet in height. As a consequence, they are able to leave four stalks in a hill, when we leave only one, and hence their crops are larger than ours. In this climate, then, the tendency of Indian corn is to grow to stalk, rather than to ear, and by adopting the plan I propose for cultivating it expressly for the ear or blade, you take advantage of that propensity, and correct what may be termed an incumberance to valuable practical uses. If this immense growth of stalk militates against the production of grain, it is no small mitigation of the evil, if we can employ the stalk measurably as a substitute for grain.—*Southern Agriculturist.*

RECENT AND EXTENSIVE MARLING IN SOUTH CAROLINA.

Columbia, S. C., November 30, 1842.

It affords me great pleasure to comply with your request, to furnish you with a statement of my marling operations during the first year, and the result of them so far as it has been ascertained.

I commenced in November last to marl my plantation at Silver Bluff, on Savannah river. There is no marl on the place. I procured it from Shell Bluff on the same river, and had to boat it twelve miles up the stream. It requires eleven prime hands to man the boat I use, and when the river is not too high they make two trips a week, loading and unloading themselves. They bring about 1100 bushels at a load. The marl is landed at a spot below high-water mark, and during the whole crop season two other hands and two carts are constantly engaged in hauling it to a place of security on the top of the bluff. At other times it is hauled directly from the landing to the fields. There are, however, thirteen hands and two mules lost to the crop. My boat, which is a common pole boat, was built chiefly by my own people, and cost me about $300, including their labor. There have been incidental expenses to the amount of about $200 this year. During the year ending on the 8th of November, there were 85 trips made and about 93,000 bushels brought up. I think I can safely calculate on bringing up 100,000 bushels per annum hereafter, with the same force. I mention these facts that every one may form his own estimate of the cost of procuring marl under similar circumstances. My calculation is that it costs me about two cents a bushel delivered on my bluff. To one having marl on his own premises nearly the whole of this expense would be saved. I am enabled, by omitting to open new land, to haul out and spread this marl, without interfering with other plantation work, or lessening the number of acres planted per hand. In hauling out I have not been able to do as much as they do in Virginia. Mr. Ruffin, the author of the marling system, hauled 24 loads of 5¾ bushels with each cart per day a distance of 847 yards; I have done but little over half as well. I use mules, however, and the land being level, carried 6¼ bushels at a load. I found the mules could not stand trotting back with the empty cart. The marl weighs about 105 lbs. per bushel. My land was laid off in squares, so many to an acre, and a load dropped in each square. It was spread by hand; each negro taking his square, and carrying his marl on a board or in a small tray. A prime fellow can spread an acre in a day. But it is a hard task, and counting the gang round I have not averaged over half an acre for each worker. The marl spreads best when damp. It will then yield to the hand, and lumps are in general easily crushed.

Shell Bluff is a bold cliff on Savannah river, over 200 feet high, and, in some places, more than 100 feet perpendicular. Professor Vanuxem, who examined it some years ago, (see Farmers' Register, vol. vii, p. 70, and also vol. x. p. 487,) discovered fourteen varieties of marl, varying in quality from 37.2 to 93.4 per cent. of carbonate of lime. In using the marl I have excluded the inferior as much as possible, and have not found the very best in any great quantity. I tested the quantity of carbonate of lime in one specimen taken at random from each boat load brought up this summer, and found the average of thirty-four loads to be 62.8 per cent., varying from 51 to 77. In every specimen there was a small proportion of oxide of iron, and clay and sand, usually in about equal quantities. There were, no doubt, other component parts which I did not ascertain; but I satisfied myself that there was neither gypsum nor magnesia. The marl presents various appearances, being in color white, brown, olive, yellow and violet, and in consistence from sand to soft stone. Some of it appears to be a concretion of shells from a size scarcely visible to the naked eye to an inch in diameter. There is no hard limestone, and it is doubtful whether any of the marl here will make lime, though it is an excellent cement. Much of that which I have used has been cut from the face of the cliff with pick-axes. It falls down sometimes in fine grains, sometimes in masses. At every handling it breaks up finer, and exposure to the air assists disintegration. I do not burn or pound it. Where it was spread last winter, an observer would readily discover it, and lumps as large as an egg, and occasionally much larger, are to be seen. A mere passer-by, however, would not notice that the land had been marled. At every working it is more and more mixed with the soil. But I imagine it will be several years before it is completely combined with it, and until then the full effect of this marl cannot be known. A difference was apparent in this crop between the effects of that spread early in February and that spread in the latter part of April.

By the 22d of April last, I had marled 175 acres at the rate of 200 bushels to the acre. Of these I planted 50 acres in corn on the 17th of March, 50 acres in cotton on the 10th April, and 75 acres in cotton on the 22d April. These three cuts are in the same field, and adjoining, being separated only by turn-rows, yet the soils vary considerably. In the corn, I laid off four separate acres along the turn-row, as nearly equal in quality as possible. The one supposed to be the best was left without marl. The others were marled with one, two and three hundred bushels respectively. It was all of the same boat load, and contained 54 per cent. of carbonate of lime. This land has been in cultivation more than one hundred years. I have planted it myself eleven of the last twelve years, and sowed it in oats the other year. I have given it three light coats of manure, the last in 1839. It is a light, gray, sandy soil. of which the following was the analysis before marling, viz.

Water lost at 300 degrees -	2 per cent.
Vegetable matter - -	3 "
Silica - - - - -	80 "
Alumina - - - -	11 "
Oxide of iron - - -	2 "
Loss - - - -	2 "
	100

This cut was in cotton last year, and my expectation was, that with common seasons it would produce twelve bushels of corn per acre. And had I not kept the unmarled acre as a test, I should have set down all over that quantity to the credit of the marl. The corn came up badly, and suffered by the birds. The four experimental acres were cultivated precisely as the rest of the cut, and were distinguished only by the posts which marked the corners of each acre. From the first, however, the marled corn exhibited a different appearance. It was stouter and of a much deeper color. As the season advanced, the difference became greater. The marled corn was as dark a green as swamp corn usually is.

The fodder was pulled on the 3d of August, and after hanging two days and a half on the stalk in dry and rather windy weather, weighed as follows:

		Increase.	Per cent.
Unmarled acre - -	250 lbs.		
Marled at 100 bushels	285 "	35 lbs.	14
" " 200 "	314 "	54 "	25.6
" " 300 "	261 "	11 "	4.4

The corn was gathered on the 24th of Oct., being thoroughly dry and having shrunk as much as it would in the field. There appeared to be little or no difference in point of soundness. It was shucked clean and measured in a barrel. The unmarled corn shelled out two quarts less to the barrel than the marled. The following was the result:

		Increase.	Per cent.
Unmarled acre - -	17 bush.		
Marled, at 100 bush.	21 "	4	23.5
" " 200 "	21 "	4	23.5
" " 300 "	18½ "	1½	8.8

From this it would appear that 100 bushels of marl was as efficacious as 200, and perhaps in such land as this such may be the fact. It appears also probable that 300 bushels to the acre is too much. I ought however to state, that this last acre had a slight sink in the centre, and that the slopes around it are much thinner than the average land. These constitute about one-fifth of the acre, and were evidently injured by the marl. It was a bad selection for the heaviest marling; but at the time it was made I did not suppose, judging by the rates at which they marled in Virginia, that 300 bushels would injure any land. My fear now is that 200 bushels may prove too much for soil like this; and I have accordingly determined to put only 150 bushels on the acre hereafter, until I see its further effects. This has been a remarkably productive season for corn. I think the unmarled acre in this cut made at least five bushels more than it would have done of an average year. I presume the marled acres have done so likewise. But whether it would be fair to attribute any of the four bushels increased to the peculiarity

of the season operating on the marl, I am wholly unable to decide. Supposing the increase from the season to be the same on the marled and unmarled land, and deducting five bushels from the produce of each acre, there will be 33⅓ per cent. in favor of the ten best marled acres. This, however, is all conjecture. The average per acre of this whole cut was eighteen bushels. The measurement of all but the experimental acres was made however by wagon loads, according to the usual plantation estimate, in which there is a liberal allowance for shrinking, &c. Had the whole been measured in the same manner as the experimental acres were, the produce would have appeared greater. I have had this cut planted in corn once before, but having been absent the whole year, no account of it was preserved, and I do not know what it produced.

I selected also and laid off separately four acres of cotton along the turn-row of the seventy-five acre cut of cotton. At the time I thought them nearly equal in quality, and the one supposed to be the best of these was left unmarled, and 1, 2 and 300 bushels of marl spread upon the other three. It turned out however that the acre with 100 bushels was inferior to the average of the cut, while the other two were far superior. I was deceived by the stalks grown the year before. The two first named acres being somewhat rolling, and the year a wet one, they produced as good cotton as the other two which were flat. The unmarled acre was not much if any superior to the one marled with 300 bushels, save that there was a spot where fodder stacks had stood in 1838-9, which produced nearly double the cotton of any other spot of the same size in either acre, and added probably 30 lbs. to the amount gathered from that acre. The marl on these acres contained, like that on the corn cut, an average of 54 per cent. of carbonate of lime. This land is of the kind commonly known as *mulatto* soil, and was cleared at least as early as the corn cut. It was certainly planted by the Indians in 1740. The following was the analysis of it before marling, for which, as well as for the analysis of the corn cut, I am indebted to the kindness of Prof. Ellet:

Water at 300 degrees - - - -	3
Vegetable matter - - - -	4.5
Silica - - - - - - -	74
Alumina - - - - - - -	14.5
Oxide of iron - - - - -	4

This cut was not planted until the 22d April, because it could not be marled before. A dry spell occurring immediately after, at the end of two weeks very little cotton had come up except in the marled acre, in which there was about half a stand. My overseer becoming alarmed in my absence, replanted the whole, and threw out the whole seed wherever it had not come up. This was done on the 6th May, so that the crop of this cut dates from that period, which is at least a month later than I should have preferred. For my experience is that early cotton, like early corn, is almost always the best. I consider the two weeks start which one half the unmarled acre obtained in this instance as of considerable consequence to it. These early stalks could be distinguished until the bolls began to open. The difference between the marled and unmarled cotton was as obvious as it was in the corn. The leaf too appeared broader and the stalk stouter from the first. The following was the production of these four acres. I state the production of all, though that of the 1 and 200 bushels acres ought not to be compared with that of the other two, on account of the relative inferiority of the soil.

The unmarled acre	1111	lbs.	in the seed.
Marled do. at 100 bush.	846	"	"
" " 200 "	1003	"	"
" " 300 "	1318	"	"

The difference between the unmarled acre and that with 300 bushels of marl, was 17.7 per cent. in favor of the latter. It would have been greater perhaps any other year than this, which has been almost as favorable for cotton as corn. The average production of the whole 75 acres was 966 lbs. per acre. I have had this cut in cotton ten of the last twelve years; in corn one, and in oats one, and the following is a statement of its production of cotton for six of the ten years; that of the other years not having been preserved.

1833	av'ge	per	acre in seed	731	lbs. manured lightly
1834	"	"	"	784	"
1835	"	"	"	951	" manured lightly
1836	"	"	"	451	"
1840	"	"	"	497	"
1841	"	"	"	500	" manured.
1842	"	"	"	966	" marled.

The other 50 acre cut of marled land planted in cotton on the 10th April. It came up in good time and was a fine stand. This is also a light gray soil, with less clay than the mulatto land, and less sand than the corn cut. It is probably as old as either, and has been cultivated in much the same way. Although planted ten days later than some other fields, and after all of them except the 75 acre cut, it soon appeared to be the oldest cotton, and certainly matured the earliest of any. Immediately after the cold weather, about the first of August, the rust commenced in it, and by the 20th of that month it had the appearance of a field after frost. Forms, small bolls, and even the leaves dropped. Most persons who saw it thought it had been cut off one half. I think myself it suffered to the extent of one-fourth at least. But I have made on this cut this year 840 lbs. of seed cotton, which is nearly 50 per cent. more than I ever had made on it before. The following is the average of its production for four other years.

1833	av'ge	pr.	acre in seed	596	lbs. manured.
1834	"	"	"	435	"
1840	"	"	"	368	"
1841	"	"	"	366	" man'd lightly
1482	"	"	"	840	" marled.

I think the injury from the rust nearly or quite equal to the benefit derived from the favorable season. And that the increase from the marl was greater on this cut than on any other, because the earliest marled and most seasonably planted. The rust here was more injurious than in any other field, and I might have attributed it to the marl, but that the 75 acre cut, also marled, suffered least of all. I

am inclined to think that the most advanced cotton was most affected, and the youngest least, and that marl had no influence one way or the other. It is worthy of remark, that while all my other cotton suffered from lice and the worm both, neither made their appearance on the marled land.

I have troubled you with this lengthy detail of my operations, because this being the first serious experiment with marl in South Carolina, (that I know of,) it may be interesting to those who have this earth within their reach, to know the particulars. From the facts I have stated, each one can form his opinion on nearly as good data as I can my own. I can only add that my expectations for the first year have been fully answered. I did not calculate on any of those magical results which agricultural experimenters so often look for, and so seldom realize to the full extent. I regard an increase of 20 per cent. as a very handsome return, and if it only does as well another year, I shall at all events be repaid for my labor, even if the beneficial effect of the marl ceases then. But the experience of all who have used it is, that it continues to improve the soil every year, until thoroughly disintegrated and combined with it, and that with proper culture it never declines from its maximum Under these circumstances, and with these hopes, I shall continue myself to prosecute the business vigorously during the summer. I have hauled marl over 100 acres, and have now at my landing enough to cover 300 acres more. My great regret is that I did not engage in the business sooner. I have long known Shell Bluff, and for some years had heard of Mr. Ruffin's successful introduction of marl into the culture of Virginia. But I had not read his "Essay on Calcareous Manures," nor examined Shell Bluff, until the summer of 1841. The idea of obtaining marl from that spot was first suggested to me by my friend Mr. Dickenson, of Georgia; and after a careful perusal of Mr. Ruffin's Essay, and an analysis of marls there, I determined to try the experiment. I have, during the course of it, received much encouraging and valuable practical information from Mr. Ruffin himself, to whom, in common with all other beneficiaries of this inestimable treasure, I owe a debt of gratitude which cannot be easily cancelled.

I am, my dear sir, with great regard and esteem, your obedient servant,

J. H. Hammond.

Hon. Whitemarsh B. Seabrook,
President of State Agricultural Society.

RENOVATION OF OLD MEADOWS.

Brooklyn, Henrico, March 13, 1843.

To the Editor of the Farmers' Register.

—It will afford me much pleasure to aid your work, if the offering prove acceptable.

Mr. Carter's conversation, recorded in the Planter, is substantially correct, as far as it goes; but much is yet to be learned on this important branch of husbandry, and experience alone will satisfy the inquirer. Herdsgrass, (red top) and timothy, are constituted very much as the witch, or wire grass, i. e., they each possess the power of branching from each joint, both of the root and stem, if turned in or over at the proper period. For proof, you see meadows where by wind or water the growing hay has fallen, the grass will sprout from the joints and form what is called second growth. In 1840, I sowed herdsgrass among corn on a place too wet in a wet summer for corn or oats. It took well, but did not yield to suit me. In August, 1841, I turned it over with a one horse tinkler plough, and rolled it and sowed timothy on the back of the sod. The result was equal to 133 per cent. gain, or 700 lbs. clean nice hay from the little spot which brought the year previous 300 lbs. very inferior and full of briers. The timothy sowed was *seed lost*, as the hay from the roots ripened first; and this will be found the case in all trials, I think, as the roots send out strong and vigorous shoots and ripen early. The season was the worst probably for the vitality of the roots that could have been selected, as there was no rain after the ploughing for four or five weeks, and yet you see the result. Hence I infer that they are indestructible; they may be suppressed by frequent turnings, but they are scarcely to be eradicated.

August is selected by me, from the fact that briers are then exterminated, if the roots are exposed; but if left to September, as Mr. Carter did, much sap has, or will have returned, and they (the briers) will certainly sprout again. I have, for experiment, turned over last season grass land in August, September and October; and should I live, will write you the results. Mr. Botts asks why this method of renovation is good. The *rationalia* of the thing is this:

Grass sown in September is put in with the lightest possible covering, and gets a feeble root; and if there is much baking rain, the earth becomes a solid sheet, and the roots cannot penetrate for food or moisture. When the sod is inverted, it comes backwards, has as much depth of earth as corn or wheat ploughed in, and the dry cold weather in spring, or the longer dry weather sometimes experienced in June, does not seem to hurt it.

The implement to be used and the hand to drive, for a handsome job, are of the first importance. The aforementioned plough was laid aside at once, and the McCormick 2-horse tried, but it it was found too deep and rough. I therefore had a large sized one-horse McCormick altered for 2 horses, and an underground coulter attached to it, and made it to turn 2 inches more than it cut, and the result was a beautiful strip 12 inches broad thrown bottom upwards; and a roller followed to close the ground firmly. No harrow is ever used, and it is unnecessary when I do the work myself; but if sufferedto be done by a negro, or any one who takes no pride in it, all the harrows and rollers in Christendom cannot get it smooth. I rejected the plough first used for its constant habit of edging up the land, instead of the flat even slice, obtained in the

altered McCormick. I have used many ploughs, but I have yet to see a better than the McCormick mould board. Its curvature under the beam is most admirably adapted to relieving itself, or preventing the choking experienced in most other forms, while the handsome wave of the mould board is to my notion unsurpassed. J. H. D. Lownes.

RUST.

To the Editor of the Farmers' Register. —In your No. for January, you request information in relation to the causes of rust, and the means of prevention and cure. The causes afford much ground for speculation, the remedy I fear hopeless.

Last year the baneful influence of rust was general on the Eastern Shore of Maryland, with the exception of points of land which project into the salt waters of the Chesapeake Bay, and some large salt water rivers.

Men of science, who have made natural history their study, often find difficulty in accounting for an isolated fact, which contradicts general experience, and the effects you mention of the crude lime upon the pumpkin patch will afford them a puzzle. I gather from your statement, that caustic lime applied one year, for the protection of the pumpkins, disclosed its benefits next year by preventing rust on wheat. The lime must have been then carbonated. In 1841, Governor Grason, who is my neighbor, applied caustic lime to a part of a field, in which he sowed wheat; he had on it a great growth of straw, but his crop was ruined by the rust. In the same year, I sowed in fields marled and unmarled, and the injury was indiscriminate. These, in addition to the facts stated by Mr. Peyton, in relation to the calcareous soil of Kentucky, put beyond question that lime is not a panacea for rust. Though I entertain the opinion, in a favorable season when wheat ripens well, that the quantity of wheat is increased, and the grain improved by the application of calcareous manures. I do not concur with you in opinion, that plethora is the cause of rust; if this was the case, rust would be confined to luxuriant wheat, but it spares neither the fat or the lean kind. I have seen wheat which would not produce more than six bushels to the acre, as much damaged as that which would produce twenty.

If putrescent manures be applied in excess, or there be too much vegetable matter in the soil, in the most propitious season, wheat will be defective; but the disease is mildew, a very different affection from rust. In 1840, upon part of a field which I was preparing for wheat, too much putrescent manure was applied, which had been also marled the same year, the straw grew too luxuriant, and the grain was destroyed by mildew. The rest of the field ripened well, and was affected neither by rust or scab, produced eighteen bushels of wheat to the acre, and some part of it, by estimate, twenty-five.

My theory is, that the cause of rust is malaria. I apprehend when the stalk of the wheat attains that point at which the absorbents are in active operation, and the state of the weather such as to produce malaria, this poisonous element is taken up, and enters into the general circulation, and manifests itself upon the cuticle, as some diseases do on animals. Perhaps malaria produces its pernicious effect by obstructing the pores, but I incline to the opinion that it enters into the general circulation, from its appearance on the stalk. Observation has induced the opinion that excessive rains, though it causes the scab, does not occasion rust, if the weather be cool. Hot damp weather generates malaria; if it be calm, it rests upon the wheat, but brisk winds dispel it without injury.

The means of preventing rust, like the philosopher's stone, may be long sought, but I apprehend will never be found, unless the chemists, who are now concocting artificial manures, shall discover some antiseptic tincture or oil, to mix with their composition. Though this disease, like some other affections which proceed from natural causes, may be mitigated. In the high country, as far as my information extends, less injury is sustained than on low. There are in the former few sluggish branches, low wet grounds and swamps, to promote the accretion of malaria, and surplus rain passes off rapidly by the natural fall. Before last year, and one other, it is not in my recollection that the wheat on my farm has suffered injury by the rust. The soil is friable, the fresh water branches are narrow, the lands have been cleared to the river, and there is but little stagnant water in my immediate neighborhood. Ten miles up the country they have mill-ponds, extensive unreclaimed marshes, and much low wet grounds. Rust there is of frequent recurrence; which strongly indicates the advantage to be derived from ditching, clearing and abating mill ponds.

Excessive heat, in combination with moisture, generates malaria. This state of the weather rarely occurs in this latitude before the 25th of June. If we could procure wheat adapted to our soil, which ripens about that period, little injury would be sustained from rust. Rare ripe, called in Virginia May wheat, so long as we grew it, was exempt. It was abandoned from failure in product. My general crop last year was red chaff. I sowed two and a half acres in the Mediterranean wheat, for experiment; it ripened six days earlier than the red chaff, was not affected by rust, and produced twenty-two bushels to the acre, weighing 60 lbs. to the bushel.

From the time wheat attains its full growth till it ripens, without reference to the weather in other respects, if there be a free current of air, I have never seen rust. Mr. Espy professes to regulate the rain; if he would teach us to raise the wind, and to keep it in free action, from the 1st of June to the 25th, he would render more essential service than by adjusting the waters of the Ohio, to navigable point, from the first of March till the last of December.

A publication in the Farmers' Cabinet, which you have translated to the columns of the

Register, states that rolling wheat is certain destruction to the Hessian fly. Should this be found to be true, it is an important discovery. Wheat might then be sown early in September, an early harvest would be the general result, by which wheat would escape the rust, and in a few years the race of the Hessian fly exterminated.

I send you this article at your request, and as an evidence of the good will I bear the Register. My notions may be deemed visionary, but they are the result of my observation. I wish this subject may excite the inquiry of gentlemen more practised than myself. Wheat is the staple crop of the Eastern Shore of Maryland; of late years it has suffered from many causes, and I sometimes fear there is an undiscovered change in our climate unpropitious to its growth. WM. CARMICHAEL.

Wye, Queens Anns' co., E. S., Md., March 7th, 1843.

CULTURE OF HEMP.

TO THE EDITOR OF THE FARMERS' REGISTER. —I have sent a paper on the culture of hemp, written by W. M. Peyton of Virginia, which I have no doubt will, if published, be read both with pleasure and profit by many of your numerous subscribers. Very respectfully,

W. A. ARMISTEAD.

Plymouth, N. C., March, 1843.

Peyton Hall, Big Lick P. O., Jan. 26, 1843.

DR. WM. A. ARMISTEAD.—DEAR SIR.—Your communication of the 10th inst. was received by the last mail. I am gratified that my remarks on the culture of hemp, in the December number of the Farmers' Register, have been useful to you, and will with pleasure add to your satisfaction by responding to your enquiries.

1. TIME OF SOWING HEMP.

Hemp is generally sown in this latitude during the month of April, sometimes in the latter part of March, and not unfrequently in the early part of May. A good deal, of course, depends upon the season in so changeable a climate as ours; but taking one year with another, I should fix upon the middle of April as the most eligible period for committing the seed to the earth.

2. MODE OF PUTTING IN THE CROP.

The ground should, if possible, be ploughed in the fall, that the winter's frosts may reduce the clods perfectly. If this cannot be done, then the same result of complete pulverization must be reached by repeated deep ploughings, harrowing and rolling with a spike roller. The necessity for this very particular preparation, you will see explained in my communication above alluded to. When it is thus brought into thorough tilth and levelled by the harrow, it is then sown broadcast exactly as you do your wheat, regulating the quantity to the acre by the character of the soil. taking care never to fall below one bushel and a peck, nor to exceeed two bushels. When sown, plough it in with single horse "bull tongues," a species of plough between the coulter and shovel, free from the objections and uniting the advantages of each. Follow the ploughs with a roller. I recommend the roller for the final operation in preference to the harrow, for two reasons: 1st. Because it presses the earth to the seed and promotes their vegetation, and 2d. Because experience has taught that harrowing inclines the land to bake, if it should be followed by a heavy rain before the hemp comes up, and a crust may thus be formed which would smother many of the tender germs; whilst experience has proven that land pressed together with a harrow, (roller?) and then soaked with rain, will crack and crumble as it dries, instead of forming a hard crust.

3. WHEN MATURED, AND HOW SAVED.

The crop matures in from twelve to sixteen weeks. The proper time for saving may be easily determined, though exactness in this is not so material as in most crops. When the male stocks which bear the blossoms begin to cast the pollen, (which will be observable whenever the hemp at this stage is disturbed by wind, by a succession of clouds like dust, which rise over the field,) the hemp is in the best state for saving. This last process, whether it is pulled or cut, is a laborious operation and requires strong hands. Whether the one or the other mode is observed, it is necessary to prevent confusion and tangling, that each hand should take a "*through*," corresponding with the length of the hemp. After it has remained upon the ground a few days for the sap in the stock to dry out, tie it up in small bundles about the size of a small sheaf of wheat, using for this purpose the stinted stalks of hemp which you will find in abundance throughout the field. Set it up in shocks of two or three dozen bundles each, to remain until it is entirely cured, which you will determine by the dryness of the stock, showing that there is an absence of all sap.

4. SUBSEQUENT MANAGEMENT.

Some permit it to remain in the shocks, as we left it in the last paragraph, while others put it into stacks to remain till the time for spreading it out to rot. The latter is certainly the preferable mode, though involving a great deal of additional trouble. It should be spread for rotting on the same ground upon which it grew, about the last of October or first of November. The time required to rot it of course depends upon circumstances of which every intelligent farmer will be a competent judge. Here it ordinarily requires several months; with you it would require less time. To ascertain when it is sufficiently rotted, have a hand of it broken, and if the wood breaks easily and separates readily from the lint, and the lint is strong, your hemp is well

watered. Very slight experience will make you master of this.

Your next step is to have the hemp set in shocks, neat and well built, with the tops so bound together as to keep them firm against winds and secure from rain.

The breaking follows; and for this you should embrace all cool and dry days, as they alone are suitable for the operation. Your breaks should be made broad behind, from eighteen to twenty inches between the slats, narrow in front and sufficiently heavy to give them steadiness. The legs of the bench to be put on with keys, instead of wedges, that they may be tightened at pleasure. The process of breaking is very simple, but it requires several years' practice before a hand is able to do what is esteemed a full day's work.

5. RAISING AND PRESERVING SEED.

Seed should be planted about the 1st of April, perhaps in Carolina three or four weeks earlier, would be better. Some prefer dibbling it in drills four or five feet apart, others planting in a check the same distance with corn. Both modes answer well. It should be kept clean, and well cultivated. When it has attained a foot in height it should be thinned so as to afford the plants full room to grow freely. When they have attained their growth and the *male plants* have generally cast their pollen, *they* should be pulled or cut, leaving only a few of the freshest scattered through the crop. This will give more room for the female plants to branch and spread, which they will continue to do until arrested by excessive droughts or frost. When the pods begin to open and drop the seed which sometimes precedes, but always follows a keen frost, it should be cut without delay. In the morning, when the dew is on the plant, is the most favorable time for this operation. When cut, it should be set up in loose open shocks to dry, which will require ten or twelve days of good weather. As the seed shatters out very easily, great care is necessary in securing them. The best mode I have ever tried is to have a large tow linen sheet made, spread it at the base of the shock, upset the shock on it and beat the heads off. Have a wagon or cart with a close body at hand to convey the contents of the sheet as it is filled. to some place of security. When you have collected it in your barn floor, beat it with light flails and run it through the fan mill. The seed when clean should be spread over the floor, and suffered to remain for some days till they are thoroughly dried, and then put away securely in garners, where the rats, who are as fond of them as old cheese, cannot possibly get at them. If thrown into a heap immediately after they are gathered, they are liable to have their vegetating principle destroyed by heating. Seed carefully managed will sometimes come up the second year; but in nine cases out of ten seed two years old will not vegetate.

GENERAL REMARKS.

The yield of this crop of course varies like that of every other crop, with the exception in its favor that it is subject to fewer disasters. No land however should be put in hemp which is not exceedingly rich; with such land the product will rarely be less than six hundred weight to the acre, and may reach ten or twelve.

If the crop is cut before the seed forms, it impoverishes less than any crop known. Where the crop is spread upon the land for watering, the reduction in its fertility is scarcely perceptible in a term of five years. Managed upon the foregoing plan, my crops have averaged me between six and seven cents per pound *at home*. Yielding me a much better profit than my tobacco, and costing me infinitely less trouble and labor.

Many in the west, and some here, are abandoning the process of dew rotting, and are endeavoring to water rot after the Russian mode. They are induced to do this from the fact that the government has offered a price for the article, provided it is made suitable for naval cordage, which if the farmers are successful in the new mode of rotting will make it an exceedingly lucrative business. The process is simple, but requires care. I have, however, as yet no experience in it. I am now constructing vats, with the intention of water rotting my next crop. Should you be inclined to water rot. and desire any information, I will cheerfully communicate such as I have. The price offered by the government is two hundred and eighty dollars per ton of 2240 pounds. Very respectfully,

WM. M. PEYTON.

AGRICULTURAL IMPROVEMENT IN NORFOLK COUNTY.

Pig Point, Nansemond county. 1843.

TO THE EDITOR OF THE FARMERS' REGISTER.

—It may be pleasing to some of your readers to hear of the transforming influence your valuable periodical has exerted and is still exerting hereabouts, in the improving of our farms, our stock, and all that pertains to our advancement in agriculture. In this small neighborhood it has been the means of adding thousands of dollars to the value of our farms. It has entirely stopped the tide of emigration, and taught the farmer to be content and happy at home. It has given an enterprise never before equalled here. It has changed the old practice in farming, introduced a love of system, order and science, and excited a laudable emulation and competition in the cultivators of the soil. And a work so well begun, I truly believe, is receiving a fresh impulse from your honored labors.

In that part of Norfolk county adjoining Nansemond, called Western Branch, lived an individual, who for the first six or seven years of the publication of the Farmers' Register was the only subscriber there. This gentleman was an ardent friend of agriculture, of his neighborhood and his country. He read with care, and applied to practice, the principles he acquired. His farm, consisting of several hun-

dred acres, a large portion of which he had endeavored to cultivate from year to year, receiving small returns for heavy expenses, he now resolved to manage on new principles. He enclosed about sixty acres, and applied all his energies to improve it. The Farmers' Register taught him the immense value of marl, in its application to the improvement of soils; and he set about converting the Indian shell banks, which had been neglected by his ancestors, and by many called land poison, into a fruitful source of improvement. He marled his land, and though from inexperience in testing the strength of marls, and in its application, some part of his land was overdone, yet this circumstance, which would have discouraged many, gave him fresh courage, and excited in his mind new energy. The cure of the disease had been pointed out in the Farmers' Register; and his woods and numberless sources of manure, before undiscovered, presented themselves to his relief. His land was enriched, and rendered highly productive, enabling him to raise far more on the sixty acres, than formerly on the several hundred, and with the labor of a few servants to support a generous hospitality and noble liberality while living, and at his death to give liberal legacies to various benevolent institutions. Near by this first subscriber lived a man at that time as averse to book farming, as he called it, as he was to all books. He had no love for reading nor taste for science. The success of his neighbor excited his curiosity, and inspired his mind with a desire for improvement; and in their frequent interviews, the contents of the Register were freely talked over, and something new gleaned out which was to be immediately tested by experience. And often, as he returned to his home, would this first subscriber place in his hands, a number of the Register, pointing out subjects of interest for him to read. Being ashamed, as he himself owns, to return these numbers without being able to show some knowledge of them, he was obliged to read, and soon to his great surprise found himself an improved man, a more ardent and understanding farmer. Imitating the example of his neighbor, he marled or limed his land, planted orchards, introduced grasses, observed in some degree a rotation of crops, drained his flat lands, and rendered his plantation, which before was poor and exhausted, very productive—enhancing its value tenfold. While engaged in reading the Farmers' Register, says he, "I was struck with the wonder-working influence of manure, as managed in some countries of Europe; and the thought was suggested that great economy might be learned in its application here. I immediately set to experimenting, and found by my new mode of economizing and applying manure, that instead of being obliged to buy corn for my own use as formerly, I had a large surplus, which I usually expended in buying more manure. My neighbors have adopted my plan with success, and I would recommend it to all." I hope this gentleman will give the results of his experiments to the public. But the influence of the Farmers' Register and its first subscriber was not confined to his neighbor. Agricultural topics became subjects of discussion in all that neighborhood, and all suitable occasions were employed to diffuse the principles of the new system. The consequence was, new sources of manure were discovered; farm pens were well supplied with the materials of compost. Clover patches, and other grasses began to variegate the farms. Improved stocks of hogs and cattle were sought after, and root culture with a proper rotation of crop was introduced. And above all, a love of agriculture, founded on scientific principles, was generated. Through the influence of John S. Wise, Esq., whose late deservedly popular report on the agriculture of Norfolk county has introduced him to the friends of agriculture abroad, and endeared him to its friends at home, and a few others, a library has been established, in which is placed the volumes of the Farmers' Register, the Cultivator and several other agricultural works of interest, all of which I am informed are read with avidity. Such has been the magic influence of the Farmers' Register and its first subscriber in that now intelligent neighborhood. And I doubt not but many can bear witness that the love they have, and the interest they feel in agriculture, was first generated and aroused by reading the pages of that periodical. But, Mr. Editor, much remains to be done in this noble cause. That caution so manifest in the mass of farmers, and by some condemned, but which to me seems a virtue, prevents that rapid advancement, and those wide-spread improvements in agriculture which the age demands. And I would inquire if there are no aids that might be called in as auxiliary to your valuable periodical, to hasten the removal of that mass of prejudicial error and ignorance, which still so widely pervade the agricultural community? If, sir, in any manner, skilful scientific farmers could be found, who would survey our counties, call the farmers of a neighborhood together, give them familiar lectures, establish agricultural clubs, and sow widely the seeds of improvement, I have no doubt but this would soon add millions to the wealth of our state. Should not our legislature take this subject in hand?

PIG POINT.

SURFACE MANURING—RENOVATION OF WORN-OUT LANDS.

[In our last number we published an able communication from Dr. Joseph E. Muse, adverse to the application of manures to the surface. The subject being one on which much contrariety of opinion exists, we now present the views of Judge Beatty of Kentucky, also a distinguished agricultural writer, which we copy from the Louisville Journal.—ED. F. R.]

JUDGE BEATTY'S ADDRESS.—We find, in the Maysville Eagle, the address of the distinguished Kentucky farmer, Judge Beatty, delivered last November in Mason county. Like

his previous productions, it is eminently valuable to western farmers. For the prosperity of the agricultural interest, he sets forth that it is necessary:

1. To renovate the soil deteriorated by improvident cultivation.

2. To create a *home market* for agricultural products, which cannot be injuriously affected, by the commercial regulations of foreign nations.

3. To foster and encourage a foreign market for our surplus of agricultural products, and the products of our manufacturing and mechanical industry, as far as it can be done, by fair and equal treaty stipulations, and commercial regulations, founded upon reciprocal advantages and benefits.

4. To furnish every convenient facility for a cheap and expeditious transportation of agricultural products to the places where they are required for consumption or exportation.

5. To establish a permanent and well-regulated currency, of equal value throughout the whole union, as the best means of promoting commerce, and of facilitating the sale and exchange of agricultural products.

6. To establish a well-regulated system of agricultural schools, in which practical agriculture, together with the sciences connected with that art, shall be so taught as to confer upon the students a complete agricultural education.

The limits of his address did not permit to discuss any but the first and second of these propositions. After quoting a number of very large crops, (among them a crop of one hundred and ninety-eight and a quarter bushels of shelled corn raised on an acre by Walter Young, Esq.,) to show to what fertility soil may be brought by proper culture, he proceeds as follows:

These crops were all raised in the year 1840, which was an uncommonly favorable season for corn. It cannot, of course, be expected that so great a yield should be obtained, except in those years which are exceedingly favorable for this crop. Making every allowance, on this account, yet we cannot but conclude that these large crops are due, in a great measure, to the extreme fertility of the soil on which they grew; and this fertility was owing to the efforts which had been made to renovate the soil, after having been considerably exhausted by severe cultivation.

But these large crops were not peculiar to the year 1840. I saw upon the farm of Mr. Isaac Cunningham, of Clark county, during the fall of 1842, a field of corn, which from a careful examination, and a calculation of the number of hills on an acre, and the average number of stalks in a hill, I am well persuaded would have yielded not less than one hundred and forty bushels per acre. That was also a very favorable year for corn, but not quite as much so as the year 1840.

Enough, perhaps, has been said to show the importance of renovating a soil, which has been greatly exhausted by improvident cultivation. I will, therefore, proceed to examine into the best means of restoring such soils to as complete a state of fertility as possible.

The liberal cultivation of grasses, together with a judicious application of putrescent and other manures, are the means by which this truly important object can be most speedily and perfectly accomplished.

To comprehend fully the manner in which grassing of lands contributes to restoring their fertility, it is necessary to give some explanation to those who have not had their attention drawn to the subject.

If growing crops, including grasses, derived their nourishment entirely from the soil in which they grow, it would be necessary—to prevent the soil from being gradually exhausted, to restore to it the entire crop. In that case the agriculturist could reap no harvest, nor consume any part of the products of his labor, without certain *ultimate* exhaustion of his soil. Nay, if he were even to restore every thing to the soil, which it produced, it would soon be completely exhausted, because all vegetable matter, whilst undergoing decomposition, gives out certain gases, some part of which escapes into the atmosphere, and are therefore lost to the soil. But a wise and benevolent Providence has made an abundant provision for the nourishing of growing vegetation, without too much exhausting the soil. The atmosphere, by which the earth is surrounded, contains an inexhaustible supply of those elementary principles, which serve as food for plants; and these are so organized as to be fitted to extract from the air, and to assimilate such of those principles as are necessary for their nourishment, in conjunction with those derived from the soil. Chemists have ascertained that much the larger proportion of the food of plants is thus derived, and hence the reason why soils are exhausted, only by slow degrees, even when the growing crops are removed, and little or nothing restored to the soil.

But if *all* that grows upon a soil is restored to it, then you not only give back to it those elementary principles which were extracted from the soil, but those also which were derived from the atmosphere, always making a due allowance for that portion of the gases which escape during decomposition. Now, suppose grasses derive one-fourth of their nourishment from the soil, and three-fourths from the atmosphere, and that, being left on the ground to decompose, they lose, during the process of decomposition, by the escape of gases, one-fourth of what they derived conjointly from the soil and atmosphere, then it follows that those grasses, while they received only one-fourth of their nourishment from the the soil, give back to it three-fourths—that is, three times as much as they derived from the soil. I put this case only by way of illustrating the principle upon which the grassing of lands improves their fertility, not with the view of giving the exact proportions in which they derive their food from the soil and atmosphere. In fact, different grasses derive different proportions of their food from the atmosphere. In general, those having the greatest number and broadest leaves derive the greatest proportion of their nourishment from the atmosphere; and hence red clover is one of the

best, perhaps the very best, of all the grasses, for restoring fertility to an exhausted soil.

Liebig is of op'nion that growing crops derive only a very minute proportion of their food from the soil up to the period of forming and ripening their seed. During this process, plants, especially those whose leaves begin to die about the time the seed is ripening, derive a much more considerable proportion of their food from the soil; and hence the importance of pasturing clover and other grasses before they shall have ripened their seed.

If grasses are mowed, and the hay removed from the ground, they will not, of course, restore land so rapidly as if the grass were left on the ground or pastured off by stock. In fact, if every thing were removed, in the form of hay, it would exhaust the soil instead of improving it, but in mowing, especially clover hay, much is left on the ground in the form of stubble, roots, &c.; and, besides, the second crop is usually left or fed off by stock. This will more than compensate for the hay removed. But to recover land rapidly, which is sowed in grass, with a view to meadow, the hay should be fed off in the meadow.

If clover be suffered to grow and fall down upon the soil, neither mowing nor pasturing it, it will undoubtedly recover land more rapidly than by any other mode of treating it. But it will be more economical to pasture it down by stock, keeping the stock constantly on the clover, so that the soil may have the full benefit of the droppings of the cattle. But care should be taken not to pasture the clover too closely, for if the ground is left too bare, or is tramped very hard, heavy rains will carry off much of the manure and light vegetable matter. With a view to preventing loss in this way, it is highly important that the clover should be as regularly set as possible, and as much of it upon ground as it is capable of nourishing to advantage. If the clover be thickly set, it not only prevents any material loss by washing rains, but also enriches the soil by drawing a proportionate increase of nourishment from the atmosphere, which is in part given back to the soil.

Liebig states as a fact, that one crop of wheat consumes of the alkalies, in a soil, as much as will furnish a full supply to fifteen or sixteen crops of clover. One hundred parts of wheat straw yields, according to Liebig, fifteen and a half parts of ashes, whilst clover yields less than one per cent. Now as the alkalies are essentially necessary to all farm crops, in a greater or less degree, no crop is so well adapted to the furnishing of this ingredient to the soil as clover; first, because this crop draws from the soil a very minute quantity; and, secondly, because it gives back to the soil, when pastured, not only what it derived from thence, but also what it derived from the atmosphere; for this, as Liebig shows, furnishes a small portion of the alkalies as well as other ingredients, which serve as food for plants.

Although clover will recover land more rapidly than any other grass, yet under particular circumstances, other grasses may be cultivated to great advantage. Thus, in the grazing districts, where great numbers of cattle are fed, blue-grass is found to be admirably calculated to restore exhausted land, aided, as it is, by the manure which drops from the cattle grazed and *fed* thereon. Fields, intended for future cultivation, are sowed with a mixture of clover, blue-grass, and timothy seed, which very soon afford a rich pasture for cattle, mules, &c. In the course of two or three years, the blue-grass will form a pretty good turf, and will, in a great degree, displace the clover and timothy. It will now be in good condition for feeding cattle upon it, with cut-up corn, during the winter. This should be distributed, with great regularity, over the entire field, so that every part may receive its due proportion of the litter and droppings left by the stock. This process should be renewed every winter till the soil is completely renovated. As at least two fields are necessary to feed on, so as to admit of a daily shifting of the cattle, these will, after they are recovered, be put in cultivation, and others fed upon until they are renovated, and so on until the whole plantation shall have been restored.

It was by this mode of treatment that Mr. Isaac Cunningham, in the course of ten years, recovered, from the greatest degree of exhaustion, the field upon which I saw the crop of corn growing, as heretofore mentioned. And it is by similar methods, that such an uncommon degree of fertility has been given to soils, in the grazing and feeding districts, which had been exceedingly reduced by improvident cultivation.

Blue-grass, like clover, derives a considerable portion of its nourishment from the atmosphere; and, as every thing is restored to the soil, and the litter left of the cut-up corn and droppings of the cattle, in addition, when grazed and fed upon, as before explained, it is very obvious that the renovation of the soil will proceed with much rapidity.

But, notwithstanding the great importance of grasses in renovating exhausted soils, putrescent manures should by no means be neglected. These abound in nitrogen, and contain also a portion of the alkalies and other minerals which form very essential ingredients in the food of plants, and which are but sparingly furnished from the atmosphere. Nitrogen, in the form of carbonate of ammonia, is obtained by growing plants, in small quantities, from the atmosphere; and the alkalies in still more minute proportions, while other valuable ingredients, particularly carbon, are obtained in great abundance from that source. Hence the importance of carefully saving and applying putrescent manures.

As this is usually done, a very large portion of the most valuable ingredients are entirely lost.

It has already been remarked, that putrescent manures abound in *nitrogen*, but if these manures are permitted to undergo rapid decomposition, they lose a large portion of this very valuable ingredient, which is given out in the form of carbonate of ammonia, which, being a volatile gas, escapes into the atmosphere, and is entirely lost. Carbonic acid gas, another invaluable ingredient, escapes in the

same way. And if exposed to the weather, another valuable portion of the manure is lost by being subject to drenching rains, which carry off every thing which water is capable of extracting from the manure. The quantity of valuable ingredients, thus drawn from the manure heap, may be seen by any person, who will examine, after much rain, the deeply colored liquid flowing therefrom. Probably not less than three-fourths of all the valuable ingredients, contained in putrescent manures, are in *these* different ways, entirely lost. But this great loss, which putrescent manure sustains by improvident management, is not the only evil. It costs nearly as much labor to haul and distribute the residue, after having lost three-fourths of its value, as would have served to transport and spread the manure, before it had lost any of its valuable ingredients. How great the advantage then of carefully *preserving* and applying putrescent manures!

The manner in which this can be most effectually accomplished is of very great importance; and I will make some suggestions with a view to correct the injurious practice, which is but too prevalent among most of our farmers, in relation to this matter.

1st. Heat and moisture are necessary to produce a rapid decomposition of putrescent manures. Hence, by throwing of these manures from stables, sheds, &c., where they are exposed in large masses to rains, and the drippings of the roofs of houses, &c., and the rays of the sun, all the conditions are furnished which are necessary to rapid decomposition, and consequently to the formation of carbonate of ammonia, and carbonic acid gas, both of which escape into the atmosphere. 2d. Thus exposed, they are subject to have all the extractive matter drawn from the manure by drenching rains, and the water dripping from the roofs of stables, sheds, &c.

To guard against these losses, putrescent manures should be taken directly from stables, cow-sheds, &c., and hauled to the fields intended for future cultivation. Being deposited there in small heaps, they are much less subject to rapid decomposition, and if spread out, as they should be as early as convenient, the decomposition will be still more slow and gradual; and, if spread on grass land, will afford an opportunity to the growing vegetation to absorb the gases as they are slowly formed.

The extract, drawn from the manure by rains, is received by the soil, and consequently no part of it is lost. If the manure is spread with regularity, every part of the ground will receive its due proportion of this extract. An idea prevails among farmers, that manure, when spread upon the soil, and not immediately ploughed under, is subject to a great loss of its valuable ingredients by evaporation. This is an error which is attended with the most mischievous consequences, as it induces farmers to suffer their manures to be in large masses, about their stables, barns, &c., until they are ready to haul and plough them under *immediately*. As this can only be done at the ploughing season, when there is generally too much work to be done to attend to hauling out manure, it is sure to be neglected, and thus it is left at the manure pile, sustaining every day more and more loss from the causes before detailed. It is important to correct this fatal error; and if farmers could be assured that the loss of manure, while lying in large masses, is subject to more than ten times the loss which it can sustain if hauled out and spread upon the grass land intended for future cultivation, they would soon abandon the practice of suffering their manure to lose three-fourths of all its valuable ingredients, instead of hauling it out upon their fields, where it will sustain scarcely any loss. The extract from manure heaps, if boiled down, loses nothing but the water combined with it, except the very minute quantity of ammonia capable of combining with water. The extractive matter, being incapable of evaporating, remains as a residuum. Experiments, made by Sir Humphry Davy, show this to be the fact in relation to the extractive matter of all kinds of grasses, and it is doubtless equally true of all vegetable matter. When manures are hauled from stables, sheds, &c., where they have been exposed to rain, a large quantity of water is combined with them, which, of course, when they are spread out, will lose by evaporation the *water* with which they were combined; but, with the exception of a minute proportion of ammonia which is capable of combining with water, this circumstance, so far from occasioning a loss of the valuable ingredients of the manure, has a powerful tendency to prevent such loss; because, as carbonate of ammonia and carbonic acid gas cannot be found without the presence of water, the drying of the manure is the very circumstance which prevents instead of occasioning loss.

It is true, water is capable of holding in combination *a very small quantity* of ammonia, and consequently carries this off during evaporation; but this can scarcely be considered as a loss, because the rains and dews that fall, holding in combination an equal quantity of ammonia, replenish this loss more than tenfold.

As it will be convenient to haul putrescent manures upon grass land at any season of the year when there is leisure, farmers should endeavor to haul out and distribute their manure as fast as it is prepared. I would strongly recommend the practice of a very judicious farmer of Bourbon county, who informed me that he never suffered his manure to be thrown from his stable, cow-sheds, &c., except immediately into a cart, to be hauled at once to the place where it was intended to apply it. He further stated that the business of his hands in rainy weather was to clean out his stables, cow-sheds, &c. A large ox-cart placed at his stable door, where it is loaded, while the hands are under shelter, when one of the hands, being furnished with a thick great-coat, drives to the field and tilts it off. In the meantime, another cart is loaded by the time the first one returns, and one of the other hands puts on the great-coat and drives it to the field, and so on in succession, the hands taking their regular turn in driving the carts, so that no one of them is exposed to the rain long enough to

get wet. Thus the manure is hauled to the field before it has lost any part of its extractive matter; but as ammonia will be formed to some extent while the manure is under cover, in consequence of the mixture of urine with it, the loss in this way would be considerable if not guarded against. Liebig informs us that this may be effectually prevented by occasionally sprinkling stables, cow-sheds, &c., with gypsum, (sulphate of lime,) which combines with ammonia and forms a fixed salt, and thus prevents any loss of this valuable ingredient. This will also relieve stables from the disagreeable smell to which they are subject, especially in warm weather, and render them more wholesome to man and beast.

A similar application of gypsum to manure about feeding-racks and other places exposed to the weather would have a like effect in preventing the escape of ammonia and carbonic acid gas. But the greatest saving of such exposed manure would arise from hauling it out and spreading it upon grass land, early in the spring, before the weather becomes sufficiently warm to occasion rapid fermentation and the consequent escape of valuable gases, and before it shall have lost much of its extractive matter.

Modern chemical investigations have thrown great light on the subject of manures, and have discovered many new substances which have a powerful effect upon the productive capacities of the soil.

I will close this branch of my subject by giving the result of a recent experiment, made in Scotland, with the following manures. A piece of ground was selected of as nearly equal fertility as possible, and was laid off into ten equal portions, the whole having been previously prepared in the best manner for meadow. The manure was applied on the 15th day of April, 1841, and the grass cut and made into hay in July following.

The manures were applied to the several portions of the ground at the rate of *forty shillings worth per acre*, except lot No. 1, which had no manure applied to it.

No.	*Product p. a.*	*Increase p. a.*
1. No manure applied,	3,360 lbs. hay	——
2. 20 bbls. Irish q. lime p. a.	4,816 do.	1,456
3. 160 cwt. lime (gas works,)	5,208 do.	1,843
4. 36 cwt. charcoal powder,	5,320 do.	1,960
5. 16 bushels bone dust,	5,544 do.	2,181
6. 144 lbs. of nit. of potash,	5,936 do.	2,576
7. 160 lbs. of nitrate of soda,	6,272 do.	2,912
9. 20 bolls of soot,	6,552 do.	3,192
10. 800 gallons of ammonia liquor, from gas works, at 5 degrees of Tweddle's hygrometer,	7,600 do.	4,200

From the table it appears that the application of forty shillings worth of Irish quick lime gave an *increase* of hay, equal to 1,456 lbs. per acre, which at two shillings and nine pence per 100 lbs., would pay the full amount of the manure applied, without allowing any thing for the increase of crops in future years. In each of the following applications the increased product was greater than the one preceding, and the *increased* quantity of hay in No. 10, was 4,200 lbs., which, at two shillings and nine pence per 100 lbs., would give £5 2s. 6d, exceeding by £3 2s. 6d. the amount expended for manure, without allowing any thing for the increase of future crops by the application of the increase.

One great advantage of these manures is that they are of very easy application, requiring but little labor for transporting and spreading them. Less than 200 lbs. of some of them being sufficient for an acre of ground, and of the heaviest, (with one or two exceptions,) less than one wagon load per acre. They are also products of Kentucky, and may be of great practical utility, in soils to which they are suitable, as the cost of purchasing and applying them will in general be compensated by the increased crop for a single year, to say nothing of the benefits of future crops.

REPORT FROM THE COMMISSIONER OF PATENTS.

We make some farther extracts from this valuable document, the whole of which is highly interesting to the agricultural reader. The Mediterranean wheat, notwithstanding it has been condemned by some of our millers as unfit for the manufacture of flour of good quality, appears to be winning its way to the favor of farmers, and promises to be a valuable variety on account of its exemption from the depredations of the fly and from the rust. We already hear very favorable accounts of its present appearance, from some of our correspondents, who have sown largely of it; and we are promised farther details at the proper time.

MEDITERRANEAN WHEAT.

Letter from Hon. John Taliaferro, of Virginia.

Washington, January 16, 1843.

Dear sir:—I have received the letter which you did me the honor to address to me under date of the 12th instant, and I seize a moment in the hurry of other concerns to reply to it.

1st. You inquire what my experience has been in a species of wheat said to have come to us from the Mediterranean, and known by that name.

2d. What has been the result of the trials of others, in the cultivation of this wheat, within my observation.

3d. Whether this wheat resists, effectually, the ravages of the Hessian fly.

4th. What, in my opinion, are the properties of this wheat which enable it to resist, without the least injury, the ravages of an insect so ruinous to every other species of wheat.

I shall answer in the above order of the questions; but, before I do so, I will give you

the result of my experience and observation as to the periods of the year in which the Hessian fly commits its ravages on wheat, and what the particular injury is at such period. The first attack of the fly is very soon after the wheat germinates, and the maggot will then be found attached to the tender sprout, immediately at or very near the point of vegetation. Hence the *radical* destruction by the fly, in the fall season, not only to large regions of a field, but not unfrequently of entire fields. This is called the fall attack of the fly; and to avoid which, farmers have been driven, by this insignificant insect, to sow wheat at a period of the fall too late to furnish reasonable expectations of a good crop, one year in ten; from the 15th of August to the 15th of September is the proper season to sow wheat. The next attack of the fly on wheat commences in the spring, as soon as the weather is sufficiently warm to hatch the egg, and with us in Virginia that occurs about the middle of April, from which time till the middle of May (up to which period the ground joint of wheat, on which the maggot subsists as soon as it is hatched, remains tender and full of juice) the spring injury is done.

In reply to your first inquiry, I answer that I obtained from my friend, the Hon. Arnold Naudain, of Delaware, a specimen of the wheat, now known as the Mediterranean wheat. I have raised five crops of it, without the least injury from the fly, and none material from rust; and such has been the invariable result of many trials of this wheat, by individuals to whom I have disposed of it for seed, during the three years past.

The reason why this wheat escapes injury from the fall attack of the fly is, that it *certainly* is so constituted as to possess, and to be sustained by a more vigorous root than any other known wheat is; so that while the fly in the fall destroys all other wheat known to us, *root and branch*, thus denuding fields more or less, according to season and other circumstances, not a root of this wheat is destroyed, owing no doubt to its energy.

The reason why this wheat escapes the spring attack of the fly is to be found in the same property—its energy of root—owing to which, or some other unknown cause, its growth in the spring is more rapid and vigorous than any other winter wheat; so that, by the middle of April, it attains a hard and sapless *ground joint*, impenetrable by the then young maggot, which produces the fly, and, if penetrated, furnishing no pabulum, (that is, sap;) hence the maggots, no matter how many, perish without doing the least injury to the wheat.

The reason why this wheat is less liable to rust than other winter wheat is, that it matures from eight to ten days earlier. I have never, till last fall, sowed this wheat earlier than the 15th of September. On the 4th of last September, I sowed five rows in drill, and at the same time I sowed in juxtaposition a drill of beautiful and popular white wheat. When I left home in November, the drill of white wheat was nearly destroyed, *root and branch*, while the Mediterranean wheat was entirely free from injury.

And as I know, for the reasons I have stated above, that it is to sustain no injury in the spring, I look to this wheat to restore to us our true seed time, and thus to exempt the wheat crop from all the maladies necessarily incident to any crop sowed or planted out of season. I have the honor to be, very respectfully, yours, JOHN TALLAFERRO.

H. L. ELLSWORTH, ESQ.

CORN STALK SUGAR.

Wilmington, December 19, 1842.

Dear sir:—Your favor of the 6th instant was duly received. I am sorry I cannot give you more definite and satisfactory information in regard to our experiments; but such as I have is at your service. The fact is, that our corn was fully ripe before the least preparation had been made toward manufacturing it; and after this the delays and breakages incident to new machinery, so hindered our progress that a considerable part of our crop was killed by the frost before it could be ground. Yet the greater part of the crystallized sugar, which I procured the present season, was made from this frost-killed corn. The product was undoubtedly injured, but not to the extent that might have been expected. This fact is important, as it shows the superiority of corn over cane; the latter is totally ruined by frost. The reason of this difference is, that corn becomes more fully matured, and it is at the same time a much more hardy plant.

For evaporation, the present season, I had two copper kettles, about two feet deep, capable of holding from 50 to 60 gallons. A charge in these kettles could not possibly be finished in less than ten or twelve hours. This long continued application of heat, caused the sirup to become very dark, and deprived it entirely of the power of crystalization. Seeing this result, I procured a tin vessel (copper would have been better,) about two feet long, eighteen inches wide, and six inches deep. In this, evaporation could be completed in about two hours; the sirup was light colored, like honey, and crystalized very well, though not so quickly as would be desirable. This sirup (although so much finer in appearance, compared with that procured by the first press) is not so agreeable to the taste; it retains, to a considerable degree, the peculiar flavor of cornstalk.

After crystalization, this taste is entirely confined to the molasses, the sugar not retaining it in any sensible degree. It appears, from my experiments, that this peculiar taste is owing to a certain substance, which may be either driven off or decomposed by the application of heat, if continued for a sufficient length of time; therefore, after the sugar is separated from the molasses, the latter should be boiled (with the addition of water, if necessary) until the corn taste is entirely removed. The shorter the time which is allowed to elapse, from crushing the stalks to finishing the evaporation, the greater will be the proportion of sugar in the sirup, and vice versa.

Profesor Mapes's directions on the subject are excellent, and, if adhered to, will ensure good results. I do not think that any manufacture ever promised better in the early stages of its introduction than this has done.

We have every reason for confidence and perseverance, and none at all for despondency; time only is necessary to perfect the details, and settle the business upon a firm foundation.

A revolution in trade will then ensue, vastly important in its effects.

Hoping that we may see all this in our time, I remain yours, respectfully,

WILLIAM WEBB.

H. L. ELLSWORTH, ESQ.

SOAP MAKING.

Much difficulty is often experienced by those who manufacture their own soap; frequently indeed the operation succeeds well, but sometimes it totally fails from unknown causes. Often when every precaution has been apparently taken, complete failure has been the consequence; and the time is not long past, when some have even declared that they believed their soap was *bewitched.* But if the rationale on which the process is founded, is but understood, the whole becomes simple and easy, and may be performed with absolute certainty of success.

Common soft soap is composed of oil (or fat) and potash. The potash is obtained from common wood ashes, by causing water to run through it, which dissolves the potash contained in the ashes, and leaves the residue behind. The manner by which the oil or grease is obtained is well known. These are made to unite and form soap by being boiled and well stirred together.

One of the first requisites in soap making is that there should be a sufficient quantity of potash dissolved in the water, or in other words, that the ley should be *strong:* this is readily ascertained by an egg; if the egg floats the ley is sufficiently strong; if it sinks, it is too weak, and must be increased in strength by evaporating a part of the water by boiling, or by passing it again through ashes.

But it not unfrequently happens that the ley is found by trial to be too strong, and yet good soap cannot be produced. This is almost always owing to the potash of the ley not being *caustic*, or capable of corroding the skin, which state is absolutely requisite to success. Potash in its purest state is highly caustic; but when ashes have been for some time exposed to the air, they gradually absorb from it a portion of the peculiar kind of air, existing in small proportion in it, known by the name of *carbonic acid*, which destroys the caustic properties of the potash, and renders it unfit for the manufacture of soap. Now, as quick lime has a stronger attraction for carbonic acid than potash has, it is only necessary to place a quantity of lime, in the proportion of half a bushel of lime for a hogshead of good ashes, in the bottom of the leech before filling it, and it will abstract the carbonic acid from the potash of the ley, as it passes downward, leaving it in a comparatively pure and caustic state. In order to prevent failure, therefore this should always be done. In order to ascertain if ley contains carbonic acid, pour a few drops of sulphuric or nitric acid into a wine glass of the ley, when, if it contains much, a violent effervescence (or boiling up of bubbles) will instantly take place, owing to the escape of the carbonic acid. The carbonic acid may be removed from the ley and render it fit for soap making, by boiling the ley with quick lime.

If the ley be *strong*, if it be rendered *caustic*, and if there be a sufficient quantity of tolerably *clean fat*, there can be little danger of success. The proportions should be about thirty pounds of fat to eight or ten gallons of ley.

Hard soap consists of soda instead of potash, united with fat; and is commonly made by adding common salt (which consists of muriatic acid and soda,) to well made soft soap while it is yet boiling. The soda of the salt unites with the fat, and forms hard soap, while the potash unites with the muriatic acid of the salt, and separates by falling to the bottom of the vessel. Different degrees of hardness in soap are obtained by using potash and soda, at the same time in different proportions. Hence grease from salt meat has a tendency to increase the hardness of soap, unless the salt be removed by boiling in water.

Soap of tallow is made in England, and largely in the United States, and is the best in common use. When scented with oil of caraway seeds and cast into a mould, it is used for the toilet, and is called Windsor soap. Other toilet soaps are made with butter, hog's lard, or with almond, nut or palm oil. Sometimes fish oil is used for coarse soaps, as well as linseed oil; and rosin is often added to give a yellow color and odor. The following proportions (by weight) have been given for a good yellow soap; tallow twenty-five, oil four and a half, rosin seven, barilla (soda) eighteen, settlings of waste ley, evaporated and calcined, ten, and palm oil one half part.

Soaps are colored blue by indigo, yellow by tumeric, &c.; and marble or veined soaps are made thus: To the soap just separated from the spent ley, new ley is added, and then copperas dissolved in water; red oxide of iron (or colcother) mixed with water is stirred in it by manual dexterity, and is so mixed as to produce the peculiar appearance.— *Genesee Farm.*

FACTS WORTHY OF NOTICE.

Whenever the farmer or planter discovers his field covered with sheep sorrel, he may conclude that the soil needs liming, the presence of the sorrel being unerring evidence of the absence of calcareous matter, and that the soil is too acid for the purposes of healthful vegetation.

Lands too, whose natural growth is pine require lime, as that wood almost always delights in an acid soil devoid of lime.

Clover, sainfoin, lucern, and all grasses of this family, require that there should be lime

in the soil on which they may be grown, and, indeed, it may be said to be labor lost to attempt to cultivate them advantageously on lands in which this mineral does not form a constituent element. Now, may it not be the absence of lime in much of the soil of some of the southern portions of our country, which opposes such obstacles to the growth of clover? We think it demonstrable that it is, and we are equally certain, that if lime or marl were applied to all such lands, that clover might be grown there as well as in any other part of the country.—*American Farmer.*

RAILROADS OF VIRGINIA AND NORTH CAROLINA.

To the Editor of the Farmers' Register.

—In reply to your inquiry whether any of the railroad companies in Virginia or North Carolina pay dividends, I regret to answer, at present they do not, and I will endeavor to explain why.

The first projected and executed railroad in Virginia is from Petersburg to Roanoke river, at Blakely. It was no small enterprise in the infancy of such works, and, when completed, was the longest line of railroad then in operation, (being 61 miles,) and was also one of the most successful. Its annual profits for several years varied from 7 to 10 per cent.; but its prosperity was impeded by the construction of a rival work, (the Portsmouth and Roanoke Railroad,) which, without rendering any benefit to the country on Roanoke, or any profit to its stockholders, involved them and the state in an expenditure of more than a million of dollars, from which no dividend has ever been derived; while, by diverting a large portion of the travel, and a little of the transportation, it diminished the profits of its elder rival, and, instead of one million of capital advantageously employed, and remunerating its holders, there were upwards of two millions rendered unprofitable, and the probability is, that one million will prove a total loss. The southern termination of the Petersburg road was, as the result proved, injudiciously located, and, as it was feared, that by far the largest portion of trade was derived from the upper country, a branch was projected, commencing some 42 miles from Petersburg, to a point about eighteen miles higher up the Roanoke, now called Gaston, where the boats descending that river can discharge above the falls, and where the roads, from some of the most productive counties in North Carolina, found an easier access to the river. This branch is called the Greensville railroad.

The enterprising people of North Carolina, aided very largely by their friends in Petersburg and Richmond, then undertook to continue the line of railroad to Raleigh; and almost simultaneously the citizens of Wilmington, N. C., obtained a charter for a road from that place to Raleigh, but, unfortunately, for all parties, they were induced by some small subscriptions to the stock, and by the promises (never realized) of much larger, to deviate from the terminus indicated by the charter, and to make it at Welden, where it connects with the Portsmouth road. By this deviation, instead of reaching the fertile portion of the state at Raleigh, and having the chance of a western extension, and forming *one* continuous line of *united* interest, it passes through a perfectly sterile country, conveying scarcely any produce to the best seaport in North Carolina; and, like the Portsmouth road, is a rival work, diverting the travel from the Raleigh road; involving another useless, or worse than useless expenditure of a million, and neutralizing (as far as profit is concerned) the expenditure of nearly thrice that sum in North Carolina. Thus in the two states upwards of five millions of capital have been rendered unprofitable, when half the sum applied to the construction of one continuous road would have been usefully and profitably expended; increased the trade of both termini, and encouraged the construction of a road toward the western and by far the most fertile portion of North Carolina.

Having thus explained the general and principal causes of the present unprofitable condition of these railroads, I will now endeavor to show that, as respects some of them particularly, there were other reasons for the suspension of dividends.

The Petersburg road was constructed ten years ago, and the iron then generally used was a light bar, which would not long bear the weight of the heavy trains that passed over it daily. About one thousand tons of iron served to lay it. This was worn out, and it became necessary to put down new iron. For this purpose three thousand tons of heavy iron was purchased last year, to be laid down in time to avoid the payment of $75,000 in duties. One thousand tons were laid last year, and about two thousand tons arrived in February, 1843, which was transported from City Point, wagoned to the depot, conveyed along the line of the road, and spiked down before the 3d of March, without interruption to the daily travel and transportation. The great expense of repairs while the old iron was on the rails, and the expenditure of more than $100,000 to replace it with new, have prevented any dividends being declared for a year past, and may have the effect for a year to come; but, as the business of this road has always been large, and its expenses will now be greatly diminished, it will be able to resume the payment of dividends, with little danger of their being again suspended. The expense to the planters in the transportation of their produce to market has been reduced one-third what it formerly was by wagons, and this alone would have ere this paid the entire expense of constructing the work. The Greensville road has undergone a similar renovation to the Petersburg, and will no doubt become profitable.

Of the prospects of the other roads, above mentioned, I will not undertake to express an opinion further than that the rivalry of one I consider as nearly at an end; and I regret, for the sake of the commonwealth, as well as of individuals, that so useless an expenditure of money was ever undertaken.

The cost of construction of the Richmond and Petersburg road was so great, owing to the nature of the ground, and the expensive bridges required on it, as to make it unprofitable; but arrangements were made to lay new iron on it, which were frustrated by the delay of the ships laden with the iron.

The road from Richmond to Potomac has paid dividends, but they were also suspended by the necessity for extensive repairs, and for putting down new iron, which I understand have been accomplished.

To render railroads profitable it is requisite to have a large amount of travel, as the expense of transporting passengers is much less than that of goods—on which latter the charge by weight is comparatively light, and the cost of loading, unloading, &c. is considerable.

There is little doubt that one continuous line of railroads north and south can be well supported, but rival lines neutralize the profits of both. It has been found so between the large cities, which have ten-fold the amount of travel that ours have. Rival lines existed between Baltimore and Philadelphia, and between Philadelphia and New York, and the proprietors found it necessary to merge their interests into one.

I have given a very long answer to a short question, but trust it will not be entirely unsatisfactory.

A STOCKHOLDER.

P. S. I have not alluded to the extreme depression of trade and the low prices of produce, as tending to diminish both trade and travel. The scarcity of money also affects the latter.

(FOR THE FARMERS' REGISTER.)

LIMING IN MONTGOMERY COUNTY, MARYLAND. RUST.

Sandy Spring, Maryland.

Notwithstanding, "it is discouraging to preach to a deaf congregation," yet, whenever it appears that from its effect, there is any improvement in the morals or practices of the congregation. it ought by all means to be persevered in; and even if the improvement is but slight, it does not lessen the obligation on those who may have a knowledge of facts which may be of use to others, to communicate them. In accordance with these views, I have been induced to throw in my mite, by way of furnishing a few facts with regard to the use and effects of lime in this neighborhood, to which I find some reference made in a letter from the present editor to William M. Peyton of Roanoke, published in the January number, new series, Farmers' Register.

From twelve to fifteen years since, one of our farmers, living on some of the most unproductive land in our county, situated about six miles from the limestone quarries, was induced to try the effects of lime in larger quantities than he had applied it some thirty years before. He had then become discouraged, by seeing no effect from it, owing, as he afterwards found, to the small quantity used, say about twenty-five bushels to the acre. He soon found the beneficial effect very great, and he wanted no other stimulant than the increase of crops, to induce him to persist in its application. From the example of the individual above alluded to, I think is mainly attributable, the great improvement in the land and crops in this neighborhood from the use of lime.

There are now within five miles of our point more than twenty lime kilns, and all have been erected within the time above-mentioned, mostly, all of which belong to farmers, who haul the stone from one to seven miles, and burn it at home, with their own wood; deeming it a cheaper and better plan than to purchase the lime. The greater part of them have purchased quarries, for some of which, as high as $800 and $1000 per acre has been paid. I have one containing rather less than one quarter of an acre, for which, I have no doubt, I could tomorrow, notwithstanding the hard times, obtain $300, which would be at the rate of more than $1200 per acre. And this from men who have worked for their money, and not disposed to expend it on a "bubble."

Now as to the effects of lime. I think it may be safely asserted, that upon an average, throughout the neighborhood, the application of 50 bushels to the acre, after the expiration of from one to three years, has trebled the crops; in some instances much more, and in a few possibly less. Various quantities have been applied, from 50 to 100 bushels, but not more than the latter quantity, to much extent, that I am aware of. My own opinion is in favor of the largest quantity, particularly of the kind of lime that we have access to, which has a good deal of sand in it. and I would put on two, or even three hundred bushels to the acre, without any fear of injury, either to the present or future crops. I have seen clover growing luxuriantly out of a bed of lime, (where a lump had slacked after spreading,) of 500 or 1000 bushels to the acre.

I will now state a few results from my own application of lime.

About ten years since, I had some lime put by way of experiment, on some very poor land, at the rate of not more than 50 bushels to the acre. I had recently purchased it, and that the land was poor, may be inferred from the price I paid for it; say $2.05 per acre. It had always been rented out. It had been cultivated under the *two shift* system, that prevails here to a great extent; that is, corn alternate with oats. In the spring of 1841 I took possession. This piece was sowed with oats and clover, and at harvest, there was at least 3 bushels of oats on the limed ground, to one on that adjoining, and a much greater difference in the clover. By the fall of 1842, there was scarcely a sprig of clover on the ground not limed, and on that limed it is now well set.

Another piece of ground I ploughed in the spring of 1841, containing rather less than one and a half acres, two thirds of which had been cultivated under the two shift system, the greater part of the time for the last half century: the balance had grown up with sassafras bushes and sedge grass, and had probably become so poor some twenty or twenty-five

years ago, that it was given up. After ploughing the whole about six inches deep, I spread 100 bushels of lime to the acre, together with the manure from the straw of about 70 bushels of oats, and a few bushels of slacked ashes which the tenant had left. It was then well harrowed, and planted with potatoes. The product about 100 bushels. I then seeded it with wheat, with a slight dressing of manure obtained principally from penning 5 head of cattle at night through the summer, and at harvest cut nearly 19 bushels of wheat to the acre. It was somewhat affected with rust, but not so as to injure the grain, for that was as fine and plump as I almost ever saw. Whether the lime had the effect to prevent its being more injured by rust, I cannot say, but of this I am confident, that some of my neighbors, whose land previous to liming was as good or better than mine, did not raise more than half the quantity, and that inferior in quality, being much injured by rust.

The theory of lime affording nutriment to the grain of wheat more particularly than to the straw is strongly supported by facts, and as it regards clover, I have recently been informed by the owner of a mill for getting out the seed, that the clover seed was more perfect raised on limed ground, and was worth from $1 to $1.50 more per bushel, than that grown on some of the best land in the county without lime.

But if I were to state one-fourth of the successful results from the use of lime in this part of the country, the limits of a Register would hardly suffice, and I will therefore conclude this with a remark made some years since, by Dr. Black of Delaware, and in which I fully concur, viz.: "Although at first view it seems paradoxical, that lime makes a stiff soil light, and a light soil stiff, comparatively speaking this is certainly so. It makes all soils rich, and this merges all distinctions." C.

[It would have been gratifying to us if our correspondent had given his name to the public, for none is entitled to greater respect. The facts stated, we can assure our readers, are from a most authentic and reliable source. —Ed. F. R.]

VALUE OF URINE AS A MANURE.

This intelligent farmer, Charles Alexander, near Peebles, Scotland, had long been impressed with the great importance of the urine of cattle as a manure; and he set about to discover, by a long and well conducted series of experiments, the best method of collecting and applying it. He began by digging a pit contiguous to the feeding stall, but distinct altogether from that which was appropriated for reception of the dung. The dimensions of the pit, according to his own account, were 36 feet square, and 4 feet deep, surrounded on all sides by a wall; and the solid contents were 192 yards. Having selected the nearest spot where he could find loamy earth, and this he always took from the surface of some field under cultivation, he proceeded to fill it; and found that, with three men and two horses, he could easily accomplish 28 cubic yards in a day; and the whole expense of transporting the earth did not exceed $22. When the work was complete, he levelled the surface of the heap, in a line with the mouth of the sewer, which conducted the urine from the interior of the building, on purpose that it might be distributed with regularity, and might saturate the whole from top to bottom. The quantity conveyed to it, he estimates at about 800 gallons; but as this calculation was founded partly on conjecture, for he measured not the liquor, it will be better and more instructive to furnish the DATA, that are certain and incontrovertible. The urine was supplied by 14 cattle, weighing about 24 stone each, and kept there for five months on fodder and turnips. The contents of the pit produced 288 loads, allowing two cubic yards to be taken out in three carts; nd he spread forty of these on each acre, so that this urine in five months, and from fourteen cattle, produced a compost sufficient for the fertilization of seven acres of land. He states further, that he had tried this experiment for ten years, and had indiscriminately used in the same field either the rotted cow dung, or the saturated earth; and in all the stages of the crop, he had never been able to discover any perceptible difference. But what is still more wonderful, he found that his compost lasted in its effects as many years as his best putrescent manure; and he therefore boldly avers, that a load of each is of equivalent value.

"Conclusions of vast importance are deducible from this statement; and I cannot resist the feeling, of placing them in a strong and advantageous light. They speak a volume of instruction; and if we are willing to learn, they must lead to a very material alteration in the construction of our barns. It appears, then, that in five months, each cow discharges urine which, when absorbed by loam, furnishes manure of the richest quality, and most durable effects for half an acre of ground. The dung pit, which contained all the excrementitious matter of the fourteen cattle, as well as the litter employed in bedding them, and which was kept separate for the purpose of experiment, only furnished during the same period 240 loads, and these, at the same rate, could manure only six acres. The aggregate value of the urine therefore, when compared with that of the dung, was in the ratio of seven to six: so that we are borne out by these premises in this extraordinary inference, that the putrescible liquor, which in this province, and under the management of our farmers, is wasted and annihilated as far as regards any useful purpose, is intrinsically worth more than the dung, as an efficacious and permanent dressing; and if we take into consideration, that this latter manure is not treated with any skill and judgment, it will not seem surprising, that the culture of white crops has never been carried here to any extent, since we have disposed and neglected the only means of creating them.—*Farmers' Magazine.*

EIGHTH AGRICULTURAL MEETING AT THE STATE HOUSE.

Boston, Wednesday, March 15, 1843.

Mr. King in the chair.

The thanks of the meeting were unanimously voted to Dr. C. T. Jackson, for his interesting and instructive lectures at the two last meetings.

Henry K. Oliver, Esq., then commenced his lecture upon the honey bee. This insect has been much observed, for its domestication brings it within the convenient notice of man. In ancient poetry, and in the Bible, it is frequently noticed. Virgil elaborately described it. He had *kings*, drones and workers. There was an error in the outset: his kings should have been *queens*. The drones are males. Virgil's knowledge of the bee was extensive, but he made many mistakes. And few in subsequent times did any better, until the 17th century.

In a common swarm there is only one queen, though there are several hundred males, and several thousand workers or sterile females. The queen is three quarters of an inch long—the workers half an inch—and the drones two-thirds of an inch. The disposition of the queen is ordinarily very gentle—it is difficult to provoke her to sting. She deposites from 12,000 to 80.000 eggs. Lays none from November to February. Her eggs are left in cells, that are varied in size and form, according to the class of bee that is to be hatched. The cells for queen bees are large and long comparatively.

Last season, Mr. O. had an opportunity at a friend's house, to watch the operations of the queen through her season of laying. A thin or *single-comb* glass hive was used: there she could be seen distinctly. Her motions over the comb are slow; she looks out for suitable cells for her purpose; first she inserts he head: if the cell is in order, she having withdrawn the head, deposites an egg. If no cell is suitable, the egg is often dropped outside, and all thus dropped are eaten at once by the working bees. A few of the cells in this glass hive were made with the side next the glass open, and the whole process of hatching and growth in them could be distinctly seen.

The royal bees are three days in the egg—for six days are worms—on the 10th, 11th, and 12th, they are nymphs, and on the 16th are perfect insects. There are several royal cells in one hive. These cells are left open, and instinct teaches the one that hatches first to go to the other cells and destroy the other embryo queens. As soon as the young queen is perfect, the *old* queen abdicates or leads off a swarm, taking with her many of the old bees and many young ones. It is the *young* queen that remains at home.

If a queen is lost, the appearances are, that the bees can hatch out a new one. To do this, they take three cells containing eggs for working bees—make these cells into one, and enlarge the house as the young queen grows. They feed the young queen thus created, upon a peculiar pungent food.

If there be no brood comb in the hive, this process of making a queen cannot be carried on—in such a case the swarm perishes.

Mr. O. has stolen a queen and boxed her up; then he has brushed off and boxed up the clusters of bees that hung on the outside of several hives; has put up these all together and shaken them up well; and then having removed them three-quarters of a mile from home, has left them without a queen for a day. In this state they did not work—but upon putting the stolen queen to them, they soon set to work, and that hive prospered. The hives from which he had stolen the queen, went on well after a few days.

Upon giving a queen to a queenless hive, they give strong tokens of rejoicing. Their noise seems to be "God save our new queen." As soon as she is presented, the bees surround her in a circle, with their heads towards her, if she is *fertile*, but not if she is barren.

Whether the queen has a body guard, is not known; but it is certain that when she stops in her progress of moving over the comb and depositing her eggs, that they cluster about her. She is the life of the colony—they do nothing without her.

Only one queen can live in a hive; if two hatch at the same time, there is a duel. Though usually gentle, they are then terribly excited.

The drones.—These are gentlemen of leisure and ease—lazy ones too—but like other gentlemen of nothing to do, they often make a great noise. They rise late—say at 10 in the morning, and they retire by 3 or 4 in the afternoon. The theory of the drone is uncertain in some respects; but drones are doubtless the males of the hive. Why so many when there is but one female, the lecturer did not know. The drones are from 500 to 2000 in a hive. By October they are all killed. None are hatched out before May of the next season. And yet the queen's eggs of March and April have been fertile. Probably impregnation is made while on the wing, and answers for the following year.

The drones are cowards, and without stings. It is 24 days from the laying of the eggs before the drones are perfect. In August and September, they are all killed; and this is done not by stinging, but by tearing them in two. This murder is always committed if the hive be healthy; but if unhealthy, they are allowed to live. It is therefore a good indication to see this butchery commence.

The busy workers.—These are barren females. They are smaller than the drones, and have long stings. When they use the sting in earnest, they generally leave sting behind and die. These are perfected in 21 days from the laying of the egg. Their numbers in a good hive are from 20,000 to 50,000. When about to sting, they utter a sharp cry and emit a strong odor.

The bee laps its food like a dog or cat. While feeding at the flower, it puts the honey into its *honey stomach*, but loads its thighs, especially in spring, with farina from the flowers. These workers perform all the labor; they gather the honey and stow it away; they keep guard, and they nurse the young.

The ventilators have the hardest work.

Stationed near the mouth of the hive, they. by a fanning motion of the wings, keep up a circulation of air. At this work, they seem to be relieved in about 25 or 30 minutes.

If it be necessary, bees will roam four miles in search of food; but this is not often needful. Of the farina of flowers, they gather and bring to the hive much more than is necessary. This is the only thing in which they seem to lack wisdom.

The wax and comb is a secretion from the bees. When wax is wanted, several bees fill their stomachs with honey, and then they hang together, and the wax is secreted from their sides.

The cells in the honey comb are not horizontal, but the mouth is the lowest part—the angle of inclination is about 5 degrees.

Swarming.—Between November and April, three-fourths of the bees usually die—but the queen's fertility can make good the loss in spring. After the spring broods come out, the old queen, with some old bees and many young ones, rush out and swarm, if they have not room and air. It is the want of these that leads to swarming.

The queen is in the centre or near the centre of the swarm. When you have hived the swarm, protect the hive from the sun. As to the best mode of hiving, no general rule can be given: this must vary according to circumstances—and experience must tell which is the best way for each particular case. At the time of swarming, the bees are not inclined to sting; if treated gently, they seldom harm any one.

The noises made formerly with shovel and tongs and warming pans, might be useful in calling neighbors to one's assistance; but as a means of detaining or quieting the swarm, it is all arrant nonsense.

Instinct—or a propensity to perform certain acts, in the same unvarying manner, is strong and remarkable in the bee. But in addition to this, we see something like reason—not human reason—but yet a kind of reason. A snail, that found its way into the hive, was glued down, and wax put around the edges of the shell, so that no offensive effluvia might pass off—but the shell itself was not waxed over. When the *slug* entered, he was stung to death and waxed all over.

A piece of honey-comb was laid upon a plate. The honey was taken from the upper side; then five little pillars of wax were built in some way, on the under side, and the comb was raised up so that the honey could be obtained from the under side also. These things show a kind of reason.

(The lecture was beatifully written, and embellished with many appropriate poetical extracts. A skeleton report shows none of its beauties, and but little of its worth.)

Boston, Wednesday, March 22, 1843.

Mr. King in the chair. Subject—The Honey Bee.

Mr. Oliver, of Salem, alluded kindly but firmly to the report of his last week's lecture in one of the agricultural papers, in which he was complained of for what he *did not* say; and rather unkindly treated.

Mr. Buckminster replied, and showed that he took Mr. O.'s remarks to himself.

After this, Mr. B. added, that he wished at these meetings for something practical. He wished to hear about the bee moth—how we can destroy him. If, said he, the gentleman can tell us this, he will give us something more valuable in relation to bees, than all else that has been told since the days of the Romans.

Besides the moth, there is also a louse which troubles the bee, especially the old bee. How can we destroy this? It used to be said, that by building a fire near the hive, on the evenings of July and August days, you can allure and destroy the miller or parent moth. One gentleman had told him, he knew not how justly, that by setting a pan of whey near the hive, the millers will go to it and be caught.

Mr. Oliver. Should a beginner with bees come to me and ask me how he should proceed, I would say to him that it is a good course to make his purchase of a swarm of bees in March: the risk of losing is less then than it is early in winter. When you have found a man willing to sell, lift up all the hives and learn the condition of each. Where the comb is well laid or built down towards the bottom, and is of a light brown color, and where the swarm is two years old, and where too, you find upon breathing into the hive, that there is great agitation among the bees—there the swarm is good. A swarm not *very* large is the best. You may generally transport them safely by turning the hive upside down, and covering well.

The hive may be placed in a bee-house, which you will make plain or ornamental, according to your means and taste. In Europe, they do not shelter the hive in a house, but place it on a post. And where hive-stealing is common, as in England, they often chain the hive to the post.

As soon in the spring as the snow-drop and crocus open, the bees will be out. And from that time, they will increase in numbers, so that in May you will begin to look out for a swarming. And how may you know when the swarm is likely to come out? As to the first swarm, no very definite sign of its coming is known. The clustering of the bees on the outside of the hive, is not a sure indication.

Provide yourself in season with a hive, such as you prefer. Dr. Thatcher's hive led the way to many improvements. Next came Mrs. Griffith's, of New Jersey. These are much alike, and each is designed to have the bees work in the lower part of the hive first.

Mr. Weeks, of Vt., has made a very good hive; especially his last ones, which let you encourage swarming or not, as you choose.

Drs. Bevon and Nutt, of England, have furnished hives. In Dr. Bevon's, you may make the bees construct the comb where you please. Mr. Nutt's is a ventilating hive. Any of these are good, and Nutt's, as it enables you to do away with swarming, is especially good for cities. In one of these, Mr. O., in 1840, had a swarm from which he took 141 lbs. of honey, and left 70 pounds.

The mode of hiving. This must often be determined by the place and manner in which

they alight. It is said by some, that if you place a long board near the hive, with one end raised three or four feet, they will alight there five times out of six; but his own have always gone to branches of trees.

If you are afraid, put on a bee dress—that is, a veil over the hat, and *woollen* gloves or mittens on the hands.

Mr. O. takes a table—on this puts a sheet—also a few small blocks. Then taking the branch on which the bees are clustered, he lays it between the blocks—then sets on the hive. Next he brings up the corners of the sheet and fastens them. Thus he both keeps the bees in and keeps them cool.

Mr. Holman, of Salem—a gentleman (Mr. O. said) who has had much experience with bees—prefers to *shake* the swarm into the hive; but Mr. O. thinks it better to put the hive over them. He never rubs the inside of the hive with any sweet or other substance, before putting it over the bees. Have several hives in readiness, for you may have several swarms. A Mr. King, of Danvers, had three swarms from the parent hive, and two of these swarmed the first season—making in all, five swarms from one hive in the season.

In eight or nine days after the first swarm has left the hive, you may go to the old hive in the evening, and if another swarm is to come out, you will, by putting your ear close to the hive, hear a little peeping noise from the new queen, and she will in that case lead off her colony in a day or two. And the same noise, eight or nine days afterwards, will be heard, if a third swarm is to come.

Do not encourage excessive swarming: this weakens the hive and exposes it to the moth. If they swarm too much, you had better restore them to the mother hive; this may be effected by stealing their queen. How is this done? Put your hand in the swarm and take her out. If you are afraid to do this, put the hive into water and nearly drown your bees, and spread them out and pick out the queen. As the bees revive, they will go back to the old home. Or you may get them drunk by burning under them the puff ball that is often found in the pastures, and then may take the queen.

In the first autumn, you must not expect a harvest from your swarm; leave them all the honey that they have made.

How shall you winter your bees? Mr. O. has tried various ways. Has put them in the cellar—but the dampness is an objection; has put them a foot or two under ground, the hive being put in a sugar box, buried with the end down. This last swarm did well, and lost in weight only 7 lbs., while usually the loss on a hive in winter is 20 or 30 lbs. In England, it is not uncommon to bury the hive in peat. But *the best way* is to leave the hive out of doors, above ground, and let the bees take their chance. Here they have a chance to preserve their natural and healthful neatness, by passing out in warm days and voiding their excrements abroad. If shut up, the hive becomes filthy.

Through the winter, Mr. O. leaves the front of his apiary open; he even lets the sun shine upon the hive; he has put straw in front of the hives, for their comfort, if they happen to fall in their feeble winter flight, but the snows will cover it often, and it is as well to let the bees take their chance, though some of them should perish.

The second season has come. Let your bees work, until they seem to have a good supply of honey in the main body of a new fashioned or improved hive, say until June 10th. Then let them into the side or the top. What is made here you may take away. Should you want a little honey for summer use, you may put a tumbler over a hole in the top of the hive and have that filled. But the principal side or top boxes it is best not to remove until cold weather; for then the bees collect in the main body of the hive, which is the warmest part.

With the *common* hive you may avoid fumigation; or use a fumigation that is not fatal. Take the dried puff ball and burn it with a proper apparatus; that is, put the hive over a tight box, and put your burning puff ball into an iron tube, one end of which is put into the hive, and putting your mouth at the other, blow the fumes inward. In ten minutes your bees will be drunk, and will have fallen, nearly all of them, into the box over which the hive is set. Now take away your hive. Then bring another hive; put it upon the same box, and go through with the same process; make these drunk and let them fall upon the first; shake the two families well together, and should you see one of the queens you may pick her out. When these bees wake up, and get sobered, they will live together in peace as one family. If *you* do not kill one of the queens, there will be a duel.

The testimony of one worthy man, of 60 years' experience, is, that the two swarms together will eat no more than one. This is strange and unaccountable, but yet seems to be true. What the advantage of this course? We save the lives; the *weaker* queen usually perishes. What the advantage of saving lives? You have stronger working bees in the spring. The worker usually lives about 8 months, the drone 3 months and the queen 4 to 6 *years*. The summer and autumn born bees, do the work of spring. These are the ones you fumigated. The spring-born ones do the work of summer and autumn. The saving of the autumn bees, therefore, gives you a strong body of workers in spring. Also, by uniting the swarms, you increase the warmth of the hive, and thus cause the queen to commence her laying earlier.

[We are obliged to defer the remainder of our report till next week.]

At the conclusion of Mr. Oliver's lecture, the thanks of the meeting were unanimously voted him. Likewise to the Hon. Daniel P. King, for the acceptable manner in which he had presided over the meetings of the winter. To this Mr. K. made a brief, but neat and appropriate reply.—*N. E. Farmer.*

LICE ON CATTLE.

A correspondent of the Maine Farmer says: "Lice on cattle at this season of the year are on the but-end of the horns. Destroy them now, and you will not have it to do in the winter or spring. Strong tobacco juice or alcohol will destroy them."

Spirits of turpentine, rubbed on at the roots of the horns, will also destroy them, and if a tea-spoonful of it be put in the cup formed just back of the horns, twice or thrice between this and the spring, it will prevent the occurrence of hollow horns.

A strong brine made of salt and water will destroy lice, and it may be said to be the safest application that can be made.—*Am. Farm*

THE BASKET WILLOW.

New York, Dec. 6, 1842.

At this period of low prices for agricultural products, it becomes the duty of every patriotic citizen, to point out all new articles for culture, that can afford profit to our farmers, more particularly such as will lessen the amount of foreign importations, our purchases having exceeded our sales five hundred millions of dollars in thirty years.

Of all the imports into our country, I have been more surprised to see that of the basket willow in larger quantities than of all others. In every state I have travelled over in this country, I have seen thousands of acres of land now lying useless, that might be made highly profitable to their owners by planting the willow. Fresh water swampy land, useless for common agricultural purposes, is the best for planting the willow. The basket willow is a light bulky, and I have no doubt our farmers could raise them, take off their bark, and send them to market at a fair profit for the usual cost of transit and other expenses incidental to the importation. Yet with such decided advantages in our favor, tens of thousands of bundles are imported into this country every year from Holland.

I have some practical knowledge on this subject, which I send you, in hopes that some of our enterprising farmers will attend to it, and raise the article for home consumption. Our basket-makers inform me that American willows are sometimes offered for sale, but that they are a brashey article, and of course very inferior to the tough foreign willow.

I was brought up to the dying business in England, in which eight of our copper kettles were appropriated to piece dying, five of them to delicate colors, requiring baskets inside to defend the goods from contracting stains, by coming in contact with the metal. To make the baskets, we raised two acres of willows, and we considered the profit equal to forty pounds per acre, after paying all expenses of cultivation, and of stripping off the bark. These willow beds were planted in fresh water swampy land, by throwing the soil into ridges, and planting cuts of willows about two feet apart. Our bed was old when I was young, and is now as productive as ever. Now and then, old stumps had to be taken up, and fresh cuts planted in their place. As we required large willows for our baskets, excepting for a part of the filling in, we cut them every two years; whereas, for common domestic baskets they are cut every year. After a new bed is planted, the product will be light the first year; increasing in number annually, as the stumps grow larger. They should be cut in the spring when the sap is running, tied in convenient bundles, with one of the smaller willows, and the but-ends put into a mud-hole containing water, to prevent the bark tightening before it is convenient to peel them. When we planted new ones, we merely cut off about two feet in length from the but-ends of the largest willows, and thrust them into the ridges where required, to about two-thirds of their length, leaving one-third above the ground for bearing.

As I mentioned before, the willows when cut were made into bundles and placed in a mud-hole to keep the bark loose until they were peeled. I will now describe the process of peeling, which may be performed by any boy or girl of ten years old. The peeling machine was very simple. It consisted of two pieces of sound tough wood, opening about one inch at the top, and coming nearly close together at the bottom; inside of each piece was inserted a small round piece of iron, leaving half its diameter projecting from the wood, and the whole was about two feet in length, the irons coming close together at the bottom. This machine was firmly fixed in the end of a strong wooden bench, very much like that used by shoemakers, standing perpendicular from it. When worked, a bundle of willows, washed from the mud, were placed parallel with the bench; the operator sitting across it, drew the willows through the machine, letting it sink to where the irons grasped the bark. In many instances, once drawing through would strip the bark; if not, the willow was turned and drawn through where the bark still adhered. All the children I ever knew, were fond of this work, and it was quite a frolic for half a dozen boys, on as many benches, striving who could strip the greatest number in a given time.

Any farmer desirous of cultivating the willow, must make sure that he obtains the right species, as his future success will entirely depend on this circumstance. There is a great variety of the willow, and but few sufficiently tough for the basketmaker. To prevent mistake in the commencement, it would be well to obtain cuttings from Holland, through the agency of the American consul. In a few years these may be increased to produce an adequate supply for our demand. I have been informed that a German basket-maker, residing, if my memory serves me, near Boston, raises his own willows, and has made money by the operation. WM. PARTRIDGE.

Cultivator.

BONE DUST.

Sandy Spring, Md., 3rd mo., 1843.

To the Editor of the Farmers' Register.—In my last I promised to furnish an account of further experiments in the use of bone manure, and have accordingly seated myself to fulfil my promise.

Owing to the tardiness with which the spring opens, an experiment that I have now in progress, of applying it in the fall as a top-dressing for wheat, is not sufficiently developed to warrant any conclusive deductions in its favor; but, from one tried last year, I am inclined to the opinion that it is a most powerful stimulant when applied in the spring. In my wheat ground there was a miserable white flint knoll, upon which the sowing of twenty bushels per acre failed to more than vegetate the plant; consequently in the spring it was a perfect eye-sore. I doubled the quantity, making it at the rate of forty bushels. The wheat soon outstripped that which surrounded it; and it is now better set with clover than any portion of the field. It is my intention to try another experiment of the same kind this spring, although, to insure its permanency, I would prefer sowing it in the fall, and, by a light harrowing, incorporating it with the surface.

At the chemical laboratory in Baltimore, bone dust can be purchased at fifty-two and a half cents a bushel, well secured in two bushel bags, and weighing 60 lbs. to the bushel. It is easy therefore to calculate what it will cost on our farms.

It was with grief that a paragraph in a newspaper lately met my eye, announcing the fact that a large quantity of bone was exported from one of our northern cities to England, where its value is known, one of whose writers, Johnston, in his Agricultural Chemistry, analyzes a ton of dry bones, and gives the following as the result.

"Dry bones contain about two-thirds of their weight of earthy matter, the other third consisting chiefly of animal matter resembling glue. Thus a ton of bone dust will contain—

Animal matter - - -	746 lbs.
Phosphate of lime - -	1245 "
Carbonate " " - - -	249 "
	2240 lbs."

And again, "The farmer now rejoices in having in one ton of bone an equivalent to 14 tons of barnyard manure." While such is their knowledge and belief, need we wonder that our bones serve to enrich a foreign soil? My object, and the only one I have in view, is to urge agriculturists to experiment with this valuable manure, feeling well assured that it will be followed by extensive use, and that ere long every city and town will have within its limits an establishment for grinding, instead of leaving them to bleach and waste away upon their commons.

Richard T. Bentley.

(for the farmers' register.)

PRICES OF AGRICULTURAL PRODUCTS.

It may be curious for future reference, or for comparison with the past, to record the present prices of some of the principal articles of commerce; and, as New Orleans is the great mart of our own staple products, we will adopt chiefly the quotations of that market, 8th March, 1843.

COTTON.

Inferior,	3½ to 4	cts.	Fair	6¾ to 7¼	cts.
Ordinary,	4¼ 4½	"	Good fair	7¾ 8¼	"
Middling	4¾ 5	"	Fine	9 9¼	"
Mid'g fair	5½ 6	"			

Received since 1st September 800,000 bales. Of 17,000 bales sold in three days, 10,000 were at 4 to 4¾ cents.

Tobacco—Crossed, 2 to 2¼ cents.
Seconds 3 3¼ "
Firsts 4 4¼ "

Received since 1st September, 18,400 hhds.

Flour—$3.06 to 3.12 per barrel.
Received 300,000 barrels.

Corn—27 cents per bushel.
Received 72,800 barrels in ears—138,500 sacks shelled.

Whiskey—16 cents per gallon.
Received 35,500 barrels.

Bacon—Shoulders, 2¼ cents.
Sides 3¼
Hams 5 to 6
Received 251,500 pounds (being 500,000 less than in 1842.) 3,850 hhds. and boxes of hams.

Lard—4½ to 5 cents.
Received 530 hhds., 56,100 bbls., 180,000 kegs.

Pork—hog round 2 cents.
Received 80,000 bbls.—1,750,000 lbs. in bulk.

Sugar—3 to 5 cents.
Received 38,000 hhds., exclusive of shipments direct from the plantations.

Molasses—in the city, 13 cents per gallon.
" on plantations, 9 cts. " "
Received 41,500 barrels, 6,000 hhds.

Bagging—(Kentucky) 12½ cents per yard.
Received 40,600 pieces.

Bale rope—(Kentucky) 4½ to 5½ cents per lb.
Received 30,000 coils.

Butter—Western—5 to 8 cents.
Received 10,000 kegs, 550 bbls.

Lead—(Missouri, &c.) $2.90 per 100 lbs.
Received 170,800 pigs.

Castor oil—50 cents per gallon.
Received 2,500 barrels.

Imports.

Coffee—7¾ to 8 cents. Imported from 1st September, 94,500 bags.

Salt—Livervool fine, $1 to 1.15 per sack of 4 bushels.
" coarse, 80 to 1.05 " "
Imported 112,000 sacks.

Salt—Turk's Island, 18 cts. per bushel.
85,000 bushels imported.

Specie imported—5,807,000 dollars.

Exchange on London—$4.45 per £ sterling—(par rate $4.80.)

On New York—at 60 days—4½ to 5 per cent. discount.

Freight of cotton to Liverpool seven-eighths of a penny sterling per pound.
Freight of cotton to France, 1¾ cents per lb.
Received in the various ports of the United States, from 1st September, 1842, to 13th March, 1843, 1,770,000 bales cotton. From March, 1842, 1,210,500 bales.

REARING OF CALVES.

The best cow calves are to be selected from such cows as are most quiet, give the richest milk, are most hardy, and the best adapted in size to the comparative goodness of the farm.

There are various ways of rearing calves. In England, as well as in this country, many prefer that calves should run with the cows from three to six months; others let calves suck twice a day—in such case the calves should take the first or thinnest part, which is less liable to injure, by producing and souring; others give to the calf new milk to drink for four weeks, or a longer period; at the end of this time, skim milk is substituted with a mixture of farinaceous food. In addition hay or grass is given, as early as the calf can eat it.

The following mode of rearing calves has been practised by the writer with great success. The young animals so raised have usually gained a growth a year in advance. The calf is allowed to suck its mother about two days, as the first milk is well fitted to cleanse the calf, and secure a full flow of milk from the cow. On the third day the mother's milk is given to the calf to drink, and continued freely for two or three weeks, till the calf begins to fill out, when the following food is substituted. A gill of flax-seed, for each calf, is boiled in water in the evening, and half the quantity given next morning and evening to the calves, adding to each mess from a pint to a quart of scalded oat meal, according to the size and condition of the calf, and about two quarts of skim milk. In five or six weeks water may be substituted, provided the calves can have plenty of green food by mowing or feeding. The mess should be stirred up while the calves are drinking. The parings of the Swedish turnip or mangel wurtzel are given in the fall, and great care is taken the two first winters to give the best hay and a liberal supply of roots, Swedish turnips, mangel wurtzel, carrots, or potatoes, or oil cake—and in summer the best grass in pasture. After this the young stock will keep in good condition without extra keeping.

By early attention to young stock, their growth and conditions fits them for an early profitable sale, or for the market at an extra price.

The writer has killed two heifers of four years old each, that weighed when killed nearly nine hundred each.

A bull calf of superior shape, and intended to be shipped to Jamaica, was allowed on an average nine quarts per day of new milk for fifty days, and then treated as before stated. At one year and eleven days it weighed eleven hundred and thirty-six pounds. It is important that the young animals should be kept clean, well carded, and regularly watered with pure water.—*Farmers' Cabinet.*

CULTIVATION OF WATER-MELONS AND CANTELOPES.

Enclosed I send you memoranda for the management of water-melons and cantelopes, by a gentleman who, in 43 degrees of north latitude, frequently raises melons weighing from thirty to forty pounds. If the same pains were taken in the south, how fine and large we might grow our melons. Your obedient servant, —— ——

Holes, 2 feet diameter, 20 inches deep, filled one foot with garden rubbish and unrotted manures, beat down hard, and watered, (two or three buckets full,) then filled to the top with rich soil; on this spread an inch of fine compost or well-rotted manure, compact, but not hard. Stick the seeds, (say twenty or thirty to a hill,) the upper end of the seed to be a little below the surface of the compost; brush over the hill with the hand, so as to fill the holes made by the fingers; then cover the hill with an inch of clear *sand*, often watered. In Alabama, I should think, grass turf, (the grass side down,) would be a good filling for the 12 inches.

Hills, 10 feet apart, 2, 3, and at most 4 plants only to remain in a hill, and standing apart from each other; thinned by the time the plants have six leaves.

If the season be dry, dig down by the side of the hills nearly as deep as the bottom of the holes, and put in a bucket or two of water, filling the hole after the water is absorbed: as soon as the yellow bug is gone, take away the sand and supply its place with soil. This is all that can be done in the hill.

When the plant has six leaves, take off the centre shoot with the point of a sharp penknife, and when the lateral shoots are six inches long, take off all but three: when these begin to fall to the ground, secure them down with cross sticks, and as they advance, spade up the ground foot deep in advance of the vines.

Once in every three or four feet put a shovelful of soil on a leaf joint of the vine, (not covering up the leaf,) and press it down gently with the foot on both sides of the leaf; if this is kept moist it will take root. The ends of the vines to be kept to the ground by cross sticks.

Let the vines spread from the hills so as to cover the whole ground.

If the side branches of the main vines are inclined to head up, and not to keep to the ground, take them off, say a foot from the main vine.

All pruning to be done in the middle of the day when the sun shines.

Let no melon set within four or five feet from the root; and then only one on a lateral branch, three to a plant. Let the vine run on as far as it will, keeping it to the ground: per-

mit no melon to grow that is deformed: pull off no male blossoms.

When the melon is nearly to its size, others may be permitted to set on the same vine, and a second crop raised. I should think the vines might be made to grow from twenty to thirty feet long.

Great care should be taken that the vines are not moved or trod upon.

The *early* but *small* melons. Let the melon set at the 2d or 3d leaf-joint from the root, and take the vine off two joints beyond the melons.

To increase the number of cantelopes.—Take off all the melons that set within two feet of the roots.

These may be planted six feet apart, 4 to the hill, and require no particular attention.

Sand on the hills is one of the best preventives against the yellow bug, though not entirely a preventive.

It is useful to plant pumpkin or squash seed near the hills for the bugs, taking care to pull them up as soon as the bugs are gone.

Cantelopes should not be planted nearer than 20 yards to muskmelons or cucumbers.

To improve your seed save none but from the very best melons.

Keep a record if you wish to know certainly the results.—*Farmers' Register, old series.*

NATURE & TREATMENT OF SPLENTS IN HORSES.

Worcester, Nov. 12, 1842.

In the Lancet for November 5th, page 223, there is a quotation from the "Veterinarian" on the cure of splents in horses; but, lest an injudicious use of the means therein proposed for the cure of splents should occur, I consider it of some importance to your readers, (two-thirds of whom are probably interested in that noble, and, to us, indispensable animal, the horse,) to offer you some observations on the nature and treatment of this disease, as it is miscalled.*

"*Nature of the affection.*—If the reader will take the trouble to examine the shank, or cannon bone, of a four-year-old horse which has done no work, he will find two thin or splent bones, attached one on each side of the cannon bone, and running parallel with it. Tracing them from their small end upwards, their heads will be found to form a portion of the knee-joint, especially on the inner side; for the head of that splent bone being larger than the other, it offers a more extensive articulating surface for the small bones, (analogous to the human carpus) which compose the joint, and therefore "splents" are usually found on the inner side of the legs.

The natural bond of union between the cannon and splent bones is an elastic membraniform substance intended to abate the shock which might otherwise be given to the shaft of this bone, by the rapid movements of the animal, and consequently to the sensitive parts of the inferior joints.

I should premise that all young bones, or bones which, from the youth of the animal, cannot have received their due form, are much more vascular than adult bones. Let us now imagine the legs of this colt to be overweighted by a rider, to be taken from the turf whereon he was foaled, and made to travel, week after week, at a quick pace along a turnpike road. What would any reader expect to be the result? An inflammatory action in the vessels of both fore legs; an attempt on the part of the vis medicatrix naturæ to defend the long cannon bone from being injuriously jarred, by strengthening its sides. Periosteal and ossific matters become poured out from and about the elastic intervening material of the cannon and splent bones, and especially the inner one, from its greater share in the formation of the knee-joint. The preriosteum becomes distended by this new and foreign substance, stretched, and forming a band upon it, and is soon rendered very tender; and this is the first sign the owner generally has of the approaching splent. Within six months, if the horse continue his work, that which was at first periosteal and fibrinous becomes ossific, uniting the splent and cannon bone together, and forming, in truth, nature's additional splent, attached in a manner to the moveable bones, which laughs to scorn our adjustment of splents on a fracture. Will the reader now discard his horse as unsound, diseased; or will he not rather admire the protecting power of nature, which she has so ingeniously employed to defend a dumb animal from the unreasonable treatment of a reasoning and talking one?

If I have succeeded in pointing out correctly the nature of this so-called disease, would it not be better to leave our horse in wiser hands than our own, and take the boon of the splent in lieu of inflammation of the feet and small joints? When the horse has arrived at seven or eight years old, nature has usually done with the old splent, and it becomes absorbed; if not, this deposite may be removed in two or three months by the application of a very simple liniment.

Its treatment.—Instruct your groom to rub, night and morning, during five minutes, into a circle of two inches from the centre of the splent, enough of the following liniment* to thoroughly wet the hair; in a few days some scurf will be seen amongst the hair of the part; let him then proceed with the liniment, with caution, turning the hair against its course to observe if the skin is giving off a little moisture; if so, discontinue the rubbing until the skin is become dry; recommence and re-omit the infrication according to the state of the skin. The removal of the eyesore called "splent" will be effected probably within the above period. I have removed a splent of old standing in a horse aged 14 within three months by this means. Now it becomes necessary to say, were the treatment by binding on lead as mentioned in your

* Here is a "wrinkle" for veterinarians, in a medical journal, as well as for every surgeon who keeps his horse.—*Lancet.*

* Recipe.—Oil of origanum, oil of turpentine, of each, one ounce; rectified spirits of wine, half an ounce. Mix. Make a liniment.

former number, to be adopted in the supposed case of this colt's splent, inflammation of a more serious character would, in all probability, be thereby excited. I have witnessed this disaster in one well-marked case, and I have heard of it in others, and it is with the hope of preventing my favorite animal from being unnecessarily tortured by such treatment, and, in short, for the cause of philipposity, which induces me to trouble you with this communication.

The splent, or rather, the exostosis, mentioned in the "Veterinarian," is a very different affection from the above, though easily mistaken for it. In that *disease*, occasioned by natural malposition of the horse's fore legs, or from bad shoeing, he strikes one or both cannon bones with his hoofs or shoes, and that is the origin of this misnamed splent. Here, again, the above treatment will suffice for its removal, defending the leg during the cure with an India-rubber boot. But the lead compress is a clumsy, useless, and probably dangerous application; still it may be tried when the liniment fails, which will seldom happen.

I have now acquitted myself of my kindly intention towards my equine companions for these twenty years, and in their name, I solicit forgiveness for having thus far intruded on your valuable pages. T. CHIRURGUS.

Lancet.

GARDENS.

Hamden, March 10, 1843.

TO THE EDITOR OF THE FARMERS' GAZETTE.—When last I had the pleasure of addressing you, it was to recommend to the citizens of New Haven the establishing a botanic garden, not only for its great utility to the student of botany and medicine, but also to the lover of nature's exquisite beauties, those lovely fragrant flowers that adorn our earthly paradise.

I would now venture to say a word or two to my brother agriculturists on the same subject, but only recommending the cultivation on a limited scale, for the ornament and comfort of our domestic dwellings. Where do we find a more rational amusement for our leisure hours, and those of our family, than in the culture of a well-regulated kitchen and flower garden? It not only contributes to our physical, but also improves our mental enjoyments. Show me a cottage or farm-house surrounded by an ornamental and well-kept garden, and I will venture to pronounce the inmates an intelligent, industrious and thriving people; altogether of a more elevated character, not only as agriculturists, but as citizens, relatives and friends. Look on the other side, and see the dilapidated cottage or farm-house, with fences down, cattle, pigs, and poultry tenanting in common the fields, high-road, and what ought to be a garden, and I will venture to point out a poor farmer, a poor citizen, and a faithless friend, not only faithless to his neighbor, but to himself and family; and we generally trace the cause of these evils to the political arena of the bar-room, where the time that might be profitably spent in cultivating a garden is wasted in wrangling about who shall or shall not enjoy the loaves and fishes of the public purse—leaving the care of providing home bread to chance, and exposing a helpless family to penury and wretchedness, who otherwise might have enjoyed all the comforts of enlightened industry—a home smiling in rural beauty, the cheerful abode of peace and plenty.

It is frequently made an objection, that a garden is too expensive, and requires more time than can be spared from more important business of the farm. This is a mistake, it being a well ascertained fact, that no part of a farm will so amply repay the cultivator as a well regulated garden. It has been justly estimated as adding greatly to the comforts of a family, as well as a considerable source of profit over any other portion of land of greater extent under ordinary culture. This alone should be an inducement to every judicious farmer, to try the experiment; but when we see the incalculable blessings bestowed in refining the taste, elevating the mind, and civilizing the otherwise boorish nature of man, we cannot hesitate to give the subject serious consideration, and soon as possible carry into effect the practical operation of well fencing, trenching and planting a convenient patch for the purpose; and, where skill is wanting, any kindly disposed individual will render aid as required. It has been a subject of remark, that men fond of the culture of fruits and flowers are seldom or never tipplers, and generally happy and peaceful citizens.

If trenching with the spade be considered too much labor, the plough may be made a tolerable substitute, by adopting the methods as proposed by your intelligent correspondent, Mr. Robinson, of ploughing two furrows deep, taking care to supply a sufficient quantity of rough manure to be turned down deep. You need not fear its being lost; the roots of plants will soon find it out, and amply repay the cost and trouble. A few dollars judiciously expended in culinary vegetable seeds, annual, biannual and perennial flowers, shrubbery and fruit trees of choice varieties, will be amply sufficient for our purpose, and the culture will not require more care than the same quantity of well tended corn, provided the ground is well cleaned of weeds at the beginning, and no weeds permitted to seed, or any manure containing such seeds introduced into the after culture. Compost, containing lime, ashes and night soil, are among the best component parts for this purpose; and, immediately on a crop becoming ripe, clear the ground by digging and turning under all the refuse stalks and weeds, which will keep the land always prepared for a new crop for the fall or next spring.

The chief beauty of England consists in its simple cottages of the peasantry, with their neat little ornamented fruit and flower gardens, neat clipped hawthorn hedges, and ornamental rustic bowers of fragrant climbing plants, that meet the eye at every turn, as well as the substantial farm-house and highly culti-

vated farm. These it is, and not the palaces of the nobility, that constitute the charm of English scenery; and as we import many of her expensive fashionable follies, why not add a few of her good qualities, and thereby increase our own stock of the useful and ornamental improvements. T. W.

SALTPETRE, &c.

Mr. Editor,—Inquiries being frequently made, both verbally and by letter, to me, respecting my opinion as to saltpetre being a fertilizer of the soil, or beneficial to crops, I will state for the benefit of all whom it may concern, my experience in the article last summer.

And first, myself and a farmer in Southington, by the name of Clark, agreed with Messrs. Hotchkiss & Whittelsey, wholesale merchants of New Haven, to get us half a ton of saltpetre in the crude state. It was bought in Boston, and cost, delivered at New Haven, six dollars a hundred weight. I took five hundred and fifty odd pounds. By the way, Hotchkiss & Whittelsey bought considerably over half a ton, and I believe they readily sold it to the farmers or gardeners.

My field of corn last summer was a little over nine acres; in rye the summer before; the stubble turned over in the fall; harrowed well in the spring. I measured off two acres on one side, ploughed it deep, and harrowed smooth. I then sowed one hundred weight of the saltpetre, mixed with four bushels of plaster, on the surface; went over with a bush harrow, and left smooth for planting. On the 29th of April, the ground being dry and in good order, I planted it with large eight rowed corn, (I had the same kind the year before, of friend Hubbard of Guilford,) four feet between the rows, and three on the row; the seed soaked for about thirty hours in cold water, saltpetre and plaster. I judge not over half the corn came up.

The next week, three acres more were ploughed, and planted in the same way—same kind of corn—except no saltpetre or plaster sowed but the ground was pretty well covered with long manure, and ploughed under. About two-thirds of the corn came up.

The next week, planted the remainder of the field, manured and planted in the same way, with about one acre of the China tree, the balance the Dutton corn; the seed soaked the same as above; perhaps not quite as much saltpetre. It came up well.

After hoeing the first time, I planted the field, where it was necessary, with Dutton corn, soaked as before, which came up well. The corn was finally thick enough, and there were no worms or insects that annoyed the corn at all as I discovered.

In 1841 I cut about two bushels of Rohan potatoes, and soaked them in plaster for three or four days. They came up well. I thought it a benefit to the crop. Thinking that nothing would kill a Rohan, I cut two bushels and soaked them in a compost of plaster, ashes and saltpetre, wet with urine, for about three or four days—and not one piece ever came up.

Wishing to plant white beans between part of my corn, I put half a bushel to soak in cold water and a little saltpetre, on Friday evening, expecting to plant on Saturday; but the rain broke us off, so that part of them were planted on Monday morning. Those planted at first, about one-half came up; those kept over until Monday, not one in a hundred ever made their appearance.

In February, 1842, I turned over two and a half acres of stiff sward land, which had been in meadow for four or five years. One acre I measured off for turnips; the balance for potatoes; and after manuring, harrowing, &c., planted as follows:—About the 20th of May, seven different kinds of potatoes, sixty-five hills on a row, two feet apart, and three feet between the rows—potatoes all cut, and two pieces in a hill. A compost of one hundred weight of saltpetre, ten bushels of wood ashes, eight bushels of ground oyster shells, and three of plaster, well mixed together, and a small handful put on to the potatoes in each hill, and then covered, except every eleventh and twelfth row through the piece planted without the compost. They all came up well and grew well. When I came to dig, found that the rows without the compost were from half a bushel to three pecks less, to average the different kinds.

And now for the turnips. I carted from about my buildings and lanes, twenty-five loads of rich turf, twelve bushels of leached ashes, and eight bushels of ground shells were put upon the acre, ploughed several times, harrowed and made mellow. On the 9th of July, I sowed one hundred pounds saltpetre mixed with three bushels of plaster; bushed it over and left smooth for seeding. I then divided the acre into three equal parts, and sowed one part on the 9th with ruta-bagas; on the 14th sowed one-third more with what is called the yellow stone turnip; on the 25th sowed the common white mixed long and flat; one-fourth pound of seed for each kind; and I am well convinced that if they had not been near so thick, there would have been more bushels. They were generally not very large, but grew like onions, crowding each other out. I had on the acre 700 bushels. They were sowed broadcast, with no other tillage except a few spells of weeding. After they were up so as to cover the ground, they were sprinkled with two bushels of plaster. Nothing appeared to eat them, or destroy a plant. I see from the Albany Cultivator, March number, p. 43, W. M. Cornell's statement, that he sowed two pounds of seed on one acre. If I was sure of the seed coming up and standing as mine did I would not wish over half a pound to the acre. On one side of my rye field there is about two acres of very poor soil. The last crop taken off was buckwheat. This part of the field I got ready, and harrowed in the rye on the 29th of August, together with sixty bushels of slaked lime, eight bushels of ground shells, and one hundred and seventy five pounds of saltpetre, with grass seed. The rye this fall appeared well, considering the

state of the soil. The rest part of the field was manured, and when we come to harvest we can judge better as to the worth of this kind of manure.

After finishing my potatoes, as I have stated, had about one bushel of the compost left, that I sowed on about one-fourth of an acre, a poor dry spot in my meadow. In about two weeks I thought the grass was much blacker, and more thrifty than common, and, when we came to mow it, there was certainly much more than usual.

I have used a little of the saltpetre on my garden, but do not think it of much use there. I have used none upon my fruit trees. Peaches, we have none of late years, nor cannot have, as I see, for I have tried various methods to have the trees live, but it is worse and worse, and they will die the first year that they come up, many times, in this section.

I have stated about all I know respecting the article of saltpetre as a fertilizer of the earth, or for crops; and you will readily perceive, without my telling you, that it is in a rough farmer's style. I will further state, that last fall I took one peck of common salt and one pint of saltpetre and dissolved in water, and soaked two bushels and an half of seed wheat for eight or ten hours; then laid it on the barn floor and mixed four bushels of slacked lime. After lying a few hours, sowed the same, and it looks well. I have raised, the season past, fifty bushels of winter wheat, which was fixed for sowing the same way, except no saltpetre. The miller makes me forty-two pounds of flour per bushel, which is as white and as nice as the Genesee flour.

As there is considerable said in the agricultural papers respecting common salt sown upon land, I will here state one experience I had ten years ago this spring. I purchased fifty bushels of the finer kind of rock salt, forty of it I sowed on a field of nine acres—there was rye and wheat on the field the year before. It was ploughed clean in the spring, the salt sowed and harrowed; the crop a good one. The next spring sowed with oats and grass seed, and the field has lain for pasture until 1841, and I believe produced more grass than any other of the same number of acres on the farm, not excepting the meadows. I believe it is many times beneficial to soak our seed grain in a mixture of saltpetre; but don't use too much, as I think many times I have. We know it is very powerful, and I believe it good for the land, like lime; but we cannot see the immediate effect, like some other kinds of manure.

But, my brother farmers, we must all keep trying, if we intend to improve our worn out farms, and raise the standard of the agricultural community to what it should be. I have already sent to New York for ten barrels of the poudrette, and I intend to try that this season. I likewise use plaster pretty plentifully, and some lime, ashes, muck, &c., and now I am using my pen, and if the printer can read and spell this article right, he may publish the same if he chooses. CLAUDIUS ALLEN.

Cheshire, March 13, 1842.

[*Farmers' Gazette.*

THE HESSIAN FLY.

PUBLISHED BY REQUEST.

White House, Q. Ann's Co. Md.

TO THE EDITORS OF THE AMERICAN FARMER.—Although much has been written and published in the different agricultural journals of our country, respecting the natural history and habits of the so called Hessian fly; and more particularly as to the mode which it instinctively takes to propagate its species, this seems yet to be an unsettled and disputable point among both entomologists and farmers. I profess to be but a humble member of the latter class, making no pretensions to rank amid the scientific corps. Having some time ago made some observations, and an experiment, not so fully carried out as I could have wished, with the view of satisfying *myself* on the subject, I will proceed now to detail them to you, for the purpose of casting in my mite towards elucidating this much vexed question. Many years past, perhaps as far back as twenty-five, a species of wheat was introduced into this section of our country called and known as the "Lawler wheat;" it was, I believe, at the time said to have been first propagated somewhere in your state, and brought thence into Pennsylvania, by a travelling Methodist minister in his saddle bags, (whence it was sometimes called the saddle-bags wheat;) from the latter state it gradually found its way into Delaware, Maryland, &c. Like most farmers in this part of the state, about twenty years ago, (I was then a green one,) I procured some of this said Lawler wheat for seed, principally because it was then recommended as possessing the power or faculty of resisting, or recovering from the attack of the Hessian fly, better than any other species of the plant heretofore known among us. Owing to this supposed quality, I commenced sowing it on the 19th of September, being some twenty to twenty-five days earlier than my usual time; by the second week of October, the first sown wheat being well up, and having generally put forth its second and third blades, I resorted to my field to endeavor to satisfy myself by ocular demonstration, if I could do so, whether the fly did deposite the egg on the blades of the growing plant, having seen it then lately asserted, by a Virginia writer on the subject, that such was the fact. Selecting what I deemed a favorable spot to make my observation, I placed myself in position, by reclining in a furrow between two wheat lands. It was a fine, warm, calm, genial forenoon; and I had been on the watch but a minute or two, before I discovered a number of small black flies, alighting and setting on the wheat plants around me; and so strong seemed to be their predilection for the wheat, that I did not observe a single fly to settle on any grass, or other thing within my view, but the wheat. I could distinctly see their bodies in motion when settled on the leaves or blades of the wheat, and presently one alighted and settled on the *ridged* surface of a blade of a plant completely within my reach and distinct observation. She immediately commenced disburdening her ap-

parently well stored abdomen, by depositing her eggs in the longitudinal cavity between the little ridges of the blade. I could distinctly see the eggs ejected from a kind of tube or sting, or by the elongation of the body; the action of the insect in making the deposit, being similar to that of the wasp in stinging. After she had deposited, as I supposed, some eight or ten eggs, I easily caught her upon the blade, between my finger and thumb, not giving her time to complete her operation, lest she might escape me; having sufficiently wounded, I wrapped her up in a piece of paper, and put her securely in my waistcoat pocket. I then proceeded to take up the plant, on the blade of which I saw the eggs deposited; which I did, with as much as I conveniently could of the circumjacent earth, and wrapped it all securely up in a piece of newspaper. After that I continued my observations on the flies, caught several similarly occupied, and could see the eggs uniformly placed in the longitudinal cavities of the blades of the wheat; their appearance being that of minute reddish specks. My own mind being thus completely and fully satisfied as to the mode in which the egg was deposited, I proceeded directly from the field to my dwelling, and having procured a large glass tumbler, put the plant with the eggs upon it in the tumbler, added a little water to the earth, and immediately secured the aperture of the vessel, by covering it so securely with paper that no insect could get access to the interior. The paper was sufficiently perforated with pin holes for the admission of air, &c. The tumbler, with its contents thus secured, was placed in a south window of my dining room, and daily and anxiously watched by myself, to endeavor to discover the hatching of the eggs. Being but little about the house, however, I was disappointed in my wishes in this respect, until coming in about the middle of the fifteenth day from the time of the deposite of the eggs, I was so fortunate as to discover a very small maggot or worm, of a reddish cast, making its way with considerable activity down the blade, and saw it till it disappeared between the blade and stem of the plant. This, I have no doubt, was the produce of one of the eggs, and would, I presume, have hatched out much sooner, had the plant remained in the field in its natural position. It was my intention to have carried out the experiment, by endeavoring to hatch out the insect from the flaxseed state of the larvæ, into the perfect fly again; but being called from home, the plant was suffered to perish, and thus terminated my experiment and observations in this instance. That the insects I saw making their deposite in the wheat plants in the field, were the real so-called Hessian flies, I had no doubt at the time, nor have I since had any reason to change that opinion. The fly that I caught on the blade of wheat as above stated, I enclosed in a letter to Mr. John S. Skinner, the then, as now, editor of the American Farmer of Baltimore, who having examined it, as well as I now recollect, with a microscope, pronounced it to be a genuine Hessian fly, and identical in appearance with others then recently received from Virginia. I have not the American Farmer by me, and cannot therefore refer more particularly to Mr. Skinner's article on the subject. I have not myself, for say the last twenty years, had the least doubt that the Hessian fly deposites its eggs on the blades of the growing wheat principally; that in a few days, how many I don't pretend to determine, the egg hatches into a worm, which descends to its resting place between the blade and stem of the plant, where it is to be found in the maggot state, in which it does the principal, if not the only injury to the plant, by extracting and feeding on its juices; thence it changes into the flaxseed, or dormant state, and thence hatches out into the perfect fly. And I further believe that this most destructive little insect does not always confine itself to the wheat alone, but occasionally resorts to other plants somewhat similarly constituted, on which to deposite its eggs. I well recollect that, many years ago, while examining a species of grass growing luxuriantly in the yard of the dwelling-house at Swan Point, in Kent county, I discovered therein a number of the larvæ of an insect, which I then thought, and still believe, were those of the Hessian fly in the flaxseed state. That grass had leaves or blades with a ridged surface, similar to the wheat plant. There is another insect which probably does more injury to our growing wheat than is generally apprehended; the larvæ of this may sometimes be found in the spring of the year, in the centre of the main stem of the plant, in the shape of a small worm. It was once shown to me, about the first of May, 1820, in plants taken from my wheat crop here, by the late Dr. Ewnalls Martin, of Easton, Talbot county; but he wholly repudiated the idea of its having any connexion with the Hessian fly; he called it, I think, the budworm. It is my belief that the eggs of the Hessian flies, deposited in the fall, remain in the torpid flaxseed state during the winter, and hatch out thence during the first apparently warm weather in the succeeding spring. I have frequently had many of them alight on my clothes, while passing about the farm in the months of March and April. I have thus, Messrs. Editors, given you my observations and crude notions on this, to farmers at least, most interesting subject; and in doing so have extended my letter to much greater length than I had any idea of doing when I first took up my pen to write to you. Should you, however, deem the communication worthy of a place in the columns of the Cultivator, I shall not regret the time or trouble it has given me to make it, as perhaps it will lead others much more capable than I pretend to be, to make more minute investigations on this most important subject, and give the result of their observations and experiments to the agriculturists of our country through the medium of your most interesting and useful journal.

—*Alb. Cultivator.* EDWARD TILGHMAN.

CEMENT TO MEND BROKEN CHINA OR GLASS.—Garlic stamped in a stone mortar; the juice whereof, when applied to the pieces to be

joined together, is the finest and strongest cement for that purpose, and will leave little or no mark if done with care.

ASHES ON CORN.

Messrs. Editors.—I have been in the habit of using ashes and plaster on corn, and believing that ashes are worth the most, I thought last spring that I would ascertain the fact. I therefore left six rows through the middle of my field No. 1 without plaster or ashes; six rows do. No. 2 with plaster in the hill on the corn; do. six rows No. 3 with ashes in the hill; six do. No. 4 with ashes and plaster in the hill; six do. No. 5 ashes and plaster in the hill, and on the corn after the first hoeing; the quantity used was about a table-spoonful to each hill. The rows were long enough to contain a quarter of an acre, each 6 rows. The result was—

No. 1 had	22 bushels ears.	
' 2,	24	"
' 3,	26	"
' 4,	26	"
' 5,	31	"

The field marked out three feet each way, and the cultivator used each way, and hoed twice. Thus you see No. 1 would yield at the rate of 44 bushels per acre, and No. 5, 62 bushels per acre, which I should think about an average with the rest of the field. The soil is a sandy loam, mixed with limestone gravel.

I do not wish to be understood that plaster is of no benefit to land, for I believe it is very beneficial; I believe if farmers would apply their ashes to their land, it would net them nearer 100 per cent. than 10 or 12

A FRIEND OF AGRICULTURE.

Central N. Y. Farmer.

LIQUID MANURE.

At a meeting of the Royal Agricultural Society in Great Britain, a few weeks since, a gentleman present, Mr. Landor, strongly recommended the more general use of liquid manure, a subject to which farmers had not given that attention which it deserved. They all knew that manure must be reduced sooner or later, not only to a liquid state, but to a state far more subtile, before it could be taken into the almost invisible fibres of seedling plants; and wherever a man lost the soakage of his farm, he lost half his manure. He was convinced that great improvements would yet be made in agriculture by practical experiments, and by calling to their aid that greatest of sciences, chemistry.

The Earl of Talbot, who presided at the meeting, also made some remarks, going to show the great value of liquid manure. He said that he and a friend went on a sort of agricultural tour through the farms in Switzerland, in September. In this month, he saw turnips which were just coming up, and were about the size of radishes. He observed a man and woman and a donkey employed in applying liquid manure to this crop of turnips. The liquid manure was in a tub, and the woman had a kind of water-pot with which she ladled it; she made a circle in the earth around the plants, and that was filled with this composition, be what it might. He asked the man whether it would be of any use. "Use!" replied the man, "why in three weeks it will make these turnips the size of my two fists." He (the earl) was quite aware that he should be told that the climate had a great deal to do with it, and he admitted that it had; but still there was a crop of turnips upon that land growing in September, which had been planted after a crop of wheat had been gathered; and he thought, that with all the disadvantages in regard to climate, some plan might be adopted in England to multiply in some similar manner the produce of the land."—*New England Farmer.*

PRESERVING FRESH MEAT.

Many of our readers are doubtless aware that a process has been invented for preserving fresh meat, by which it may be kept untainted for years. To such the subjoined article will bring no startling fact to the contemplation of their minds. But as there may be hundreds who are not convinced of the possibility of a dish of fresh provisions being so preserved as to be untainted after performing two East India voyages, and fresh turtle good after having been killed 20 years, the following article may at least to them appear to partake of novelty. Although we have often seen brief notices that such a process had been discovered, we confess we were not prepared for the facts which are disclosed in the subjoined description of the establishment of Messrs. John Gillon & Co., of Leith, Scotland, which we copy from Chambers' Edinburgh Journal.—*American Farmer.*

VISIT TO AN ESTABLISHMENT FOR PRESERVING FRESH MEAT.—We lately had an opportunity of visiting an establishment of this nature—one of the very few which as yet exist in these islands—and were so much struck by what we saw, and by a consideration of all the connected circumstances, that we have thought it might be worth while to submit the whole to the public.

The establishment visited by us was that of John Gillon and Company, in Leith, which stands almost alone in Scotland; there being only three on a limited scale in the provinces; while in England there are, to the best of our knowledge, only two, and in Ireland two or three. The Messrs. Gillon and Company's establishment was set on foot as lately as August, 1838, and already it is, in mercantile language, a great concern, the individuals employed being upwards of a hundred, while the capital must be many thousand pounds. It is distinguished by several improvements, which make it worthy of particular notice.

It is perhaps necessary for the sake of most readers to explain that the object is to preserve

fresh food, animal and vegetable, in air-tight tin cases, so that it may be sent to any part of the world, and used at any distance of time from that when it was prepared. Those who have been accustomed to think of only the ordinary and well-known ways of preserving meat, by salt (or some corresponding foreign body) or by extreme drying, will be taken somewhat by surprise when we advert to a method which dispenses with those expedients, so sure to be injurious to the meat; and proceeds upon the simple expedient of a complete seclusion of the substances from contact with the atmospheric air. This was a principle totally unknown till some French chemists, amidst the exigencies of the Revolution, discovered it; since which time, the means for effecting it have been greatly improved, so that the trade of preserving cooked food, and sending it abroad, is now pursued to an immense extent in France. It is a scientific discovery worthy of a nation which, more than any other, seems to aim, at rendering science directly subservient to the increase of human happiness.

A large irregular pile of building, situated in a court entered from Mitchell street in Leith, is the scene of Messrs. Gillon and Company's operations. Certain apartments serve for stores of meat, fowls, and other articles of provision; and there is one devoted solely to the business of cleaning neats' feet, of which many hundred sets are used weekly. The whole of the uppermost floor of a large portion of the building is used as a place of cookery, the steams and fumes flying off through ventilators in the roof. Along one side are ranged nine boilers upon furnaces, of 100 gallons contents each, in some of which neats' feet are boiled for the purpose of obtaining the gelatinous product, a large element in soups of various kinds; while in others are boiled knuckles of beef, and those other inferior parts of meat from which cooks extract what they call stock, the basis of all soups. Each of the boilers is fitted with an inside case, pierced like a cullender, and in this the meat is boiled, so that it never can adhere or burn during its preparation. The liquor from the feet and the liquor from the meat are received into troughs, where they are cooled. There is in both cases an oily scum from the boilers. From the neats' feet comes a whitish oil, which is sold for greasing the machinery used in silk factories. From the inferior parts of meat is derived an oil of superior quality, resembling butter, which is very useful as an element for the preparation of barley broth and other messes. The last is sold at fivepence a pound, and is at that price cheap and economical. The poor people are so sensible of its value, that much more is called for than can be supplied, and sometimes they will come for it from a great distance. The soups, of which nearly twenty kinds are exported by Messrs. Gillon and Company, from real turtle and mulligatawny down to ox tail, are prepared in the usual way from the stock and other proper materials, but on such a scale of concentration, that, when used it is necessary to add water equal to half the quantity. They are poured into round canisters, in pints, quarts, and larger quantities, and then sealed up in a manner which will afterwards be described. Several peculiar Scottish soups are prepared at Messrs. Gillon and Company's establishment, chiefly for the sake of Scotchmen residing abroad, particularly those in the East Indies. Amongst these are sheep's head broth, hotch-potch, and cock-leeky; the last a strong soup prepared from a cock, which is spoken of by King James in "Nigel" as an excellent article. The haggris, "great chieftain of the pudding race," is another peculiar dish prepared by the company. It is, as is generally known, composed of minced tripe, and liver mixed with suet, oat-meal and spice, and boiled in the stomach of a sheep. One of these savory messes, which are only too good for those who affect to loathe or despise them, was in January last eaten at the celebration of Burns' birth-day in Dumfries, after having made a voyage to India and back. Burns' own haggris, if, instead of being eaten fifty years ago, it had been subjected to the same process, would have been in a state equally fit to regale the company.

In the same upper floor which contains the boilers, we saw a host of women engaged in preparing various dishes, fish, flesh and fowl. Many were buised in cleaning and cutting vegetables, as parsnips, beet root, turnips, and carrots, the two last being amongst the largest article of export to the East Indies, where, it seems, they do not grow. Two women, whose fate we could not help pitying, though perhaps without just cause, had a whole day's work before them in the peeling and cutting of onions—sage and onions with gravy being much in demand at sea and abroad, for sauce to ducks and pork. Four men were busy cutting away flesh from the bones of mutton and beef, to be arranged in roasts, of from two to six pounds, a whole cloud of which we saw spitted upon a novel-looking jack, of ingenious construction, before a large fire. These little roasts are put into the ordinary cases, which are then filled up to near the top with gravy. We may vainly attempt to imagine what a treat such a thing must be to a little cabin company dining in the middle of the Pacific, or to an officers' mess posted in Affghanistan, in whose ears, perhaps, the "glorious roast beef of old England" is at the same time sounding. In another part of the room we saw great quantities of minced collops in preparation. Such, if we recollect rightly, were all the objects engaging attention for that day. If we had returned on another, we should of course have found the people at work on other dishes, there being about ninety in all prepared in the establishment. It would be tedious to enumerate these; but we may mention, that, amongst the number, are corned and seasoned beef, veal in several different forms, roasted and jugged hare, cow-heel and potted head, turbot, haddocks, salmon, and other native fish, together with oysters and lobsters, both for separate eating, and to be used as sauce. We may add, that we have tasted some of the oyster soup, as well as the separate oysters, after they had been to Calcutta and back, and found them both excellent. The

King of Prussia is a regular customer of Messrs. Gillon & Company for these two articles and turtle soup. We must not omit cream, by which tea might be sweetened in China itself, and a certain kind of concentrated gravy in very small packages, designed to furnish an invalid in any part of the world with the soothing and nourishing dish styled among us beef tea. Neither perhaps ought we to overlook a special article entitled Meg Merrilies soup, a composition from game of all conceivable kinds, designed to imitate that with which the gypsy of Dernecleuch regaled the terror-chilled soul of Dominie Sampson.

We were next conducted to the workshops where the cases are made, a part of the establishment by no means the least important, for it employs thirty tin plate workers, every three of whom have a boy under them; that is, forty persons in all. Some cases are made in a square trough-like form, with a lid closing the top, being designed to hold herrings laid at length. But the shape mostly used is that of a round canister, and of this shape there are cases of all sizes, from that of an ordinary snuff box to a boy's hat. Lids are prepared for these cases, with a hole of an inch or half inch diameter in the centre, and these lids are soldered on after the viands have been put in. There then remains the hole in the centre, upon which, at an after stage of the process, a suitable piece of tin like a button is soldered on, thus closing up the whole, but still leaving a vacancy within, filled with common atmospheric air, which, if suffered to remain, would taint the food, and defeat the whole aim of the persons concerned. With respect to the subsequent process for extracting the air, we are not at liberty to enter into particulars, a mercantile interest being concerned in it. When the cases have been exhausted of air and finally closed,they are japanned, for their preservation from damp, labelled, and tested as to their soundness, the ultimate proof of which is their exhibiting, if quite tight, a simple or slight collapse in some part of their surface, generally in the bottom. Being now finished, they are stored in bins along the sides of a great wareroom, exactly like bottled wine in a merchant's cellar; and are thence taken by the warehousemen, and packed up in barrels for exportation. It may be added, that, when the meat is to be used, the case can be cut up with a seaman's knife, or, more conveniently with what is called a lever knife, an implement invented by Mr. Gillon, and of which specimens are sent abroad with almost every package of goods. This knife consists of a handle, no more than sufficient to fill a single hand, with a small but firm hook projecting from it, somewhat in the form of the blade of a reaper's hook, and with the same degree of sharpness, but with a close instead of a sweeping curve, the whole being of such a size that it might be carried in a waistcoat pocket. The point being inserted through the tin, the operator is enabled to cut up the case with ease, by using the fore end of the handle as a fulcrum on which to rest the instrument, while the handle is alternately quickly raised and depressed.

The prices of the food thus prepared are not high, considering that bones and all other refuse are excluded, that it is cooked, often in a concentrated fashion, that there is in every instance a case varying in cost to the preparer from twopence to a shilling. We have been informed, that, in older establishments, higher prices have hitherto been exacted, and the general use of prepared fresh meat at sea and in distant countries thereby prevented. This is short-sighted policy, for moderate prices would secure a greater amount of business, and yield in the long-run greater profits. Messrs. Gillon and Company have proceeded upon the more enlightened principle, and, while taking the utmost care with regard to the quality of their goods, have contented themselves with moderate profits. The consequence is, that while the use of preserved meat is not now necessarily confined to invalids and persons of luxurious habits, as in a great measure it was formerly, they have already obtained an amount of business much exceeding that of several concerns which have been a good many years in operation. On the day when we were there, an order had arrived from Liverpool for nearly five thousand cases of different kinds of animal and vegetable food, the aggregate price of which would probably be from four to five hundred pounds. Messrs. Gillon and Company usually prepare from 800 to 1000 cases per day, and as yet they have never been able to accumulate a considerable stock of any one article. Not long ago they had a contract for no less than eight tons weight of meat and vegetables (including eight thousand little cases of concentrated gravy) with the lords of the admiralty; the whole being for Capt. Ross's Antarctic expedition, and every article warranted to keep sound for three years. It may be added, that in the mercantile service, soup and bouilli and some other antiscorbutic soups are now given by many owners to their crews, under the conviction that they are cheaper, as well as more wholesome, than prime mess beef.

Our visit was upon the whole a most gratifying one, though many of the sights presented were not of the kind which in ordinary circumstances are beheld with pleasure. We regarded the establishment as in itself a remarkable result of enterprise and ingenuity, seeing that Mr. Gillon might almost be said to have struck out the trade for himself, had bethought him of many signal improvements in it, and had found business and prosperity where many men in his circumstances would have languished in comparative indolence and obscurity. But the establishment appeared in a far more interesting light when we consider it as a practical result of science, holding forth an augury of great reductions in the existing amount of human discomfort and misery. At present, excepting in the small extent to which this mode of preserving meat has as yet operated, the fate of all who sojourn on the face of the deep, and of many other individuals placed in peculiar circumstances, is to diet upon salted meat alone, a form in which it is much less agreeable to taste, much less digestible, and apt to be productive of disease, as was signally shown in the condition of the

British navy fifty years ago. Of what great importance must it be to such persons that they should be able in the longest voyages, to feed more or less upon fresh provisions! Looking only to the feelings which must possess the many wanderers in remote climes when they eat what they have been accustomed to partake of amongst their friends at home, and what therefore cannot come before them without awakening the most tender memories and associations, we must see a great importance in the preparation of preserved fresh food. Other utilities in the discovery might be pointed out, as, for instance, its enabling nations to send to each other, in a fresh and sound state, the various animal and vegetable products of their respective countries. It is obvious that, if the cases only be made thoroughly exclusive of the atmosphere, we might have the turtle of Cuba fresh, instead of their being starved by a long voyage, and might, in exchange, send out the mutton of the Scottish Highlands and the salmon of our rivers, in all their original delicacy of flavor. At present, the price of an oyster in the market of St. Petersburg is exactly a ruble or tenpence, there being no such creature in the seas of that part of the world. Not long ago, while as yet Edinburgh could boast she had oysters, the same money bought a long hundred, or 120. There can of course be no need for the Russians paying so exorbitant a price for the article, if it can be readily sent to them from a country where it is to be had at such a low rate. The absolute certainty of preservation by exclusion of the air, is the one little point on which such results depend; and that this is easily practiceable, and that the food will accordingly be preserved in all climates, and for an indefinite length of time, has been satisfactorily proved; last year, some turtle was eaten in Dublin, which had been kept in a similar way for twenty years! It would have been not less eatable in the thirtieth century, if the case could have held good so long; for with the great principles of nature it may well be said that a day is as a thousand years, and a thousand years as one day. Perhaps the principle might be carried out to even more wonderful results. It is well known that fishes and reptiles, if congealed, or frozen up in a mass of ice, may be revived at any distance of time by merely thawing them. Our readers will further remember some speculations which appeared in a former number of the present work, respecting the instances of such creatures found alive in masses of solid rock, our theory being that they must have been embedded while in a frozen state and the air being excluded, had been thereby prevented from reviving when the temperature was altered. If these views be sound, the salmon of the Tay might quite well be packed up alive, but frozen, and sent in air-exhausted cases to Hindostan, where, on the cases being opened, we venture to predict that the animals would be found as hearty as when they made their first visit to the ocean.

BEST METHOD OF MAKING CHEESE.

BY WILLIAM DANIEL.

In responding to the discussion fixed for this evening, namely, "the best method of making cheese," I am aware of the great importance of the subject I have undertaken, and of the presence, probably, of some of our members better qualified than myself to instruct others in the manufacture of an article of such great consequence to the producers of milk, that his wife or his dairymaid may turn it to the best account, and succeed in making such a dairy produce as will command in market the best price.

After the master or dairyman has done his duty in the supply of milk of the best quality, it falls under (generally speaking) female management, and to produce a good cheese three words will suffice, viz.: time, cleanliness and industry. Short, however, as this observation may be, I beg to add a few remarks. The business of cheese-making is a regular and constant proceeding practised perpetually, every day, from time immemorial, and it seems strange, that when the ingredients employed are so few, and their nature also so regular and certain, that there should be much difficulty in producing the article pure and complete. But daily experience proves there is an amazing difference in the goodness and quality of cheese, insomuch that you can scarcely find two dairies that are exactly or even very much alike. Much probably depends on the situation of the cow-pasture being nearer or further off the house where the cheese is made, as cows driven any considerable distance before milking causes the milk to heat in their bags in summer.

Milking them in the fields, and and carrying the milk on horseback in churns or barrels is still worse, as this mode of conveyance home disturbs the milk, inclining it to the nature of churning cream for butter, and occasions probably a difficulty in bringing the cheese, or fixing the curd in the pan: and instead of one hour, the time commonly given by the dairywomen in bringing the cheese—it will frequently not come in three or four hours, and then in such an imperfect state as scarcely to be capable of being confined in the press. Whenever people find their cows in this situation, which in hot summer evenings often happens, then it is that making use of a little cold spring-water before rendling is useful, as that inclines the runnet to take effect. Experience shows this will not hurt the milk or impoverish the cheese, but the water added—say a quart, two, three, or four, or more, according to the quantity of milk to be cooled—just so as to reduce it to the temperature of what is called (or felt to be) new-milk-warm (a term generally understood;) or if a thermometer was used in such cases, it would regulate a fault of putting milk together too hot. As soon as the milk appears of a proper warmth, and before you put in the runnet, put a handful or two of salt into the pan, about two handfuls to the milk of ten or twelve cows, remembering that cheese will afterwards want a less quantity of salt than if none had been put into the milk. The thing that more dairywomen err in than any other, is gathering or

sinking the curd too soon. A very material circumstance to be attended to, is the time allowed for the runnet to take effect, which should on no account be less than an hour and a half. It may happen, and often does, that it will come sooner, but I believe it will be found that the additional time given will never be of any bad consequence, as the curd on sinking becomes more solid, and prevents what is called slip curd, which will never unite with the solid curd, and when any is found in the cheese-pan it had always better go along with the whey. In regard to the preparation of the runnet for use, the most approved way is to take pure spring-water—a gallon of water for two skins; boil the water, which makes it softer or more pure; make it with salt into brine that will swim an egg; let it stand till the heat is gone off, or till it becomes blood warm, then put in your maw skins, cut in pieces; let it steep twenty-four hours, when it is fit to use; and observe that too much runnet causes cheese to be strong, too little makes it mild, and must have more time. About a tea-cup to the milk of twelve cows will generally prove about the right quantity. Although I have mentioned as a rule, that cheese should not be stirred in the pan or gathered under an hour and a half, I have reason to believe the best managers generally let it stand two hours.

That good cheese may be made on any land I am quite prepared to contend; and one proof of this assertion is, that in this very parish two adjoining daries varied so much, that one might be termed very good, the other an inferior dairy. The then agent to the Marquis of Anglesea thought it convenient to change the respective cow-pastures, one for the other; the result was, the best dairy of cheese remaining under the same management continued the same best dairy, and the inferior dairy continued so still, notwithstanding the change. Very much depends on the condition of cheese, after all other necessary attention has been paid in the making; if not well and cleanly kept till the time it is advisable to sell, the value is lessened. An equal temperature is evidently necessary, especially in winter, and if kept on a cold plaster floor with a northern aspect, it is sure to suffer and get out of condition; but when a boarded floor (not in a garret) can be used for keeping cheese through the winter, it is very much preferable to a plaster floor. Neither in summer is it well to keep hard cheese and soft cheese in the same room.

To have every excellence it should have every advantage.

I have no doubt good cheese may be made by rule on any land, provided no pernicious weeds or plants, or distempered cattle, prevents. It often occurs that the best cheese is made on poor land, the milk being thinner, will sooner curd than rich milk; but if from rich or old turf, and proper time is given to make good curd, and the cheese well attended to, no doubt the rich grass makes the finest cheese, and most of it. Cheese from clover is the most difficult to make, even with the best dairywomen, but good stout, full-flavored cheese may be made from clover, if a good deal of time is given. Nothing is more commendable in dairy proceedings than cleanliness, and every person in looking over the utensils and viewing the whole business of making and keeping cheese till fit to offer for sale, must admire cleanliness.

In regard to the best sort of cows for dairy purposes, I do not venture an opinion. It is well known some dairy farmers in this neighborhood greatly prefer the short-horns, others still prefer long-horns; and more of the latter would, I think, be kept, if they could be found. —*London Farmers' Magazine.*

ABORTION IN THE COW.

There have been many complaints among our farmers, during the present, as well as past winters, on account of the frequent occurrence of *abortion* among their cows. We are greatly at a loss to trace the evil to any known cause, and consequently to prescribe a remedy. I extract the following from the first number of the Farmers' Encyclopedia, recently published by Carey and Hart, and which I have been much interested in looking over. This disease, if we may call it so, is one of no trifling annoyance; and is perhaps one of the greatest to which the dairyman is exposed. It deserves and requires the close attention of experienced practical men. We have this winter heard of some farmers in the vicinity of Philadelphia, who have lost eight or ten calves, that have come to premature births. Should you believe the extracts I send deserving a place in your paper, you will gratify a constant READER.

Abortion occurs oftener in the cow than in all other domestic animals put together. Perhaps it is one of the greatest annoyances the proprietor of cows has to encounter, and unfortunately, for aught we see to the contrary, it is likely so to continue; for in spite of the improved state of veterinary medicine, and the researches of skilful veterinary surgeons, both at home and abroad, abortion still continues as frequent and annoying as ever. The causes are frequently involved in obscurity; but it may be mentioned, that an extremely hot and foul cow-house, a severe blow, violent exertion, starvation, plethora, an overloaded stomach, internal inflammations, constipated bowels, bad food or water, improper exposure and the like, will now and then produce abortion. Any thing whatever, indeed, that seriously affects the health of the animal in general, or the state of the reproductive organs in particular, may do so. But abortion occurs again and again, when no such causes as those enumerated can be traced. The disease, if such it may be called, as we think it may, is even said to be infectious. No sooner does it show itself in one animal than it is seen in another, and another, till it has spread over the most part of the cow-house. Some say this is to be attributed to the odor arising from the things evacuated. Possibly it may be so, there is nothing unreasonable in the supposition; for although we cannot perceive the smell, nor account for

its peculiar influence, it is still quite within possibility that such an odor does exist, having the power attributed to it. There can be no great harm, however, in acting as if we were assured that the mischief has its origin in the source so commonly supposed, provided we do not shut our eyes to any other which accident or investigation may reveal. In the meantime, the number of abortions may be diminished by carefully avoiding all those causes which are known to be capable of producing it. Let the cows be regularly fed; let their food be good, and in proper quantities; let them have water as often as they will take it; avoid sudden exposure to cold or heat; and, above all, let the cow house be well ventilated. Prohibit all manner of rough usage on the part of those who look after the cows, whether they be with calf or not. If any of them accumulate flesh too rapidly, gradually reduce their allowance; and, on the other hand, if any become emaciated, discover the cause, and remedy it, always by slow degrees. Sudden changes in the matter or mode of feeding, should also be avoided. The same sort of diet does not agree equally well with all the cows; and this, in general, is indicated by undue relaxation, or constipation of the bowels; this should be watched, and removed at once. Attention to these, and many other minor circumstances, will amply repay the proprietor for the little additonal trouble.

"That improper, or too little food," says Mr. Lindsay, "is a prominent cause of abortion, is strongly indicated by the following facts. A friend of mine, a respectable grazing farmer, kept a dairy of 22 cows, 10 of which slipped calf at different periods of gestation. The summer had been very unfavorable in every respect, both as regarded the ground where the cows were pastured, and in getting in the hay crop. He had little or no hay of the last year's growth, and the hay of that year when cut into, was in a very bad state; but as he had no other, he was obliged to give it to his cattle. The consequence was as mentioned above; and besides, many of his stock died of various disorders; and many of those which recovered, remained long weakly."

"The most common cause of abortion in cows," says White, "is improper feeding during winter and spring, before they are turned to pasture. The filthy pond-water they are often compelled to drink, and feeding on the rank fog-grass of October and November, especially when covered with hoar-frost, are likewise frequent causes of miscarriage. I remember a farm near Berkeley, in Gloucestershire, which afforded a striking proof of the injuries of stagnant pond-water, impregnated with dung and urine. This farm had been given up by three farmers successively, in consequence of the losses they sustained through abortion in their cattle, their not being in season (that is, not conceiving,) red water, and other diseases. At length, a Mr. Dimmery, after suffering considerably in his live stock for the first five years, suspected that the water of his ponds, which was extremely filthy, might be the cause of the mischief. He therefore dug three wells on his farm, and having fenced round the ponds to prevent his cattle from drinking there, caused them to be supplied with well-water, in stone troughs erected for the purpose; and from this moment his live stock began to thrive, became uncommonly healthy, and the quality of the butter and cheese made on his farm was greatly improved. It should be observed, that on this farm the cattle were regularly fed with good hay during the winter and kept in good pasture in summer; so that there cannot exist a doubt that the losses sustained by Mr. Dimmery, were entirely attributable to the unwholesome water the animals were compelled to drink."

"In order," adds Mr. White, "to show that the accident of warping may arise from a vitiated state of the digestive organs, I shall here notice a few circumstances tending to corroborate this opinion. In January, 1782, all the cows in the possession of farmer D'Euruse, near Grandvilliers, in Picardy, miscarried. The period at which they warped, was about the fourth or fifth month. The accident was attributed to the excessive heat of the preceding summer; but as the water they were in the habit of drinking was extremely bad, and they had been kept upon oat, wheat, and rye straw, it appears to me more probable that the great quantity of straw they were obliged to eat, in order to obtain sufficient nourishment, and the injury sustained by the third stomach, in expressing the fluid parts of the masticated mass, together with the large quantity of water they probably drank, while kept upon this dry food, was the real cause of their miscarrying. A farmer at Charentin, out of a dairy of 28 cows, had 16 slip calf, at different periods of gestation. The summer had been very dry, and during the whole of this season, they had been pastured in a muddy place, which was flooded by the Seine. Here the cows were generally up to their knees in mud and water, and feeding on crowfoot, rushes, and the like. Part of the stock had recently been brought from Lower Normandy, where they had all been affected with indigestion, by feeding upon lucerne, from the effects of which they had been relieved by the operation of paunching. In one, the opening made was large enough to admit the hand for the purpose of drawing out the food; the rest were operated on with a trocar. In 1789, all the cows in the parish of Beaulieu, near Mantes, miscarried. All the land in this parish was so stiff as to hold water for a considerable time; and as a vast quantity of rain fell that year, the pastures were for a long time, and at several periods, completely inundated, on which the grass became sour and rank. These, and several other circumstances which have fallen under my own observation, plainly show that keeping cows on food that is deficient in nutrition and difficult of digestion, is one, if not the principal, cause of their miscarrying. It is stated by Mr. Handwin, that feeding in pastures, when covered with white frost, has been observed to occasion abortion in these animals."

If there be any probability of a cow miscarrying, from exposure to any of the common

causes already enumerated, let her by all means, be put apart from the others; and let a skilful person attend to the evil from which she is expected to suffer. If the approach of abortion be evident, bleeding may be had recourse to; for if it do not check abortion, it will yet do no harm though it take place. When there are any premonitory symptoms of abortion, they are precisely the same as those which present themselves in ordinary labor, with the exception of their being less marked.

Fumigation of the cow-house is resorted to as one of the means of preventing the spread of abortion; tar, sulphur, gunpowder, feathers, and the like, are burned for the purpose of destroying the odor. We have never seen a single instance of the practice being attended with the smallest success; while it is obvious that, if carried beyond a certain point, it may produce the very evil it is intended to remove or mitigate.

It is a remarkable feature in the history of this complaint, that those cows that have once miscarried, are particularly liable to do so again, at the same period of their succeeding pregnancy. Greater care is therefore requisite to guard against those causes which do, or are supposed to excite it. The treatment of abortion, when it does take place, differs not from that adopted in cases of parturition, only that the cow which miscarries should be removed with all that belongs to her, from among pregnant cows.

If the signs of approaching abortion, be discovered early, the accident may sometimes be prevented. If the cow is in good condition, then immediately let it be bled to the extent of five or six quarts, and the bowels opened with half a pound of Epsom salts, three or four drams of aloes in powder, or as many ounces of castor oil, administered in a quart of gruel; but if the cow is in very poor condition, and the miscarriage is anticipated from her having been exposed to cold, it would be more advantageous to avoid bleeding, and give her a warm gruel drink, with an ounce of laudanum in it. If after this, abortion does take place, let her be kept in a comfortable place by herself; and if the after-birth has not passed off, let no injudicious and unnecessary administration of violent forcing medicines, such as capsicum or hellebore, be given. Nature, with a little assistance, is generally equal to the perfect restoration of the animal. —*Farmers' Cabinet.*

MAGNESIAN LIME.

Hartford co., Md., 10th of Second mo., 1843.

Observing in the last two or three numbers of the Cabinet, various opinions with regard to the use of magnesian lime, I will give my own experience in connexion with that of some others, and leave the inquiring reader to judge for himself.

In the sixth month, of 1837, I applied 1000 bushels of Schuylkill slacked lime, said to contain a large portion of magnesia, to about 15 acres; the soil was so thin that under the most favorable circumstances, as to season and good cultivation, I could not have calculated, without the aid of artificial means, upon more than from 12 to 15 bushels of corn to the acre. In the autumn of the same year, I perceived a trifling improvement in the appearance of the grass, which in the ensuing spring, was still more perceptible, and which continued up to the commencement of the severe drought of that year. Late in the fall, after the abundant rains, the blue grass sprang up quite thick through the poverty grass which had heretofore covered the surface. Early in the spring following it was ploughed, but not so deep as I should otherwise have done, wishing to avoid burying the lime too deep. Between the 24th and 27th of fourth month, it was planted in corn, and as the soil was very thin, I had it run out full four and a half feet wide, and planted in the rows about two feet apart. It came up well, and continued remarkably healthy and vigorous, through the whole season. It had three dressings with the cultivator, and was hoed only enough to smother the grass between the hills; the result was from 35 to 40 bushels per acre. I think I should have had at least five bushels more to the acre, but for a violent storm early in the eighth month, of rain and wind, which prostrated the whole field in such way, that it never afterwards stood upright, besides which, a great deal was broken entirely off. The same fall the field was sown in rye, and the spring following, with timothy and clover seed; it has now the appearance of land of *more* than medium quality. It may be remarked that about one-fourth of this field was not limed; but the corn was manured in the hill, with hog-pen manure and wood-pile scrapings, which were decidedly beneficial; the corn was still not to be compared with the part that was limed; and a transient observer, at the distance of a mile, at this day, could hardly fail to notice the improved appearance of the part that was limed, over that which was manured.

The combination of magnesia, or some other deleterious substance, with this lime, I think is evident from the fact, that it was in the first place hauled in the field and put in two piles; when spread, it was taken with due care from the bottom of one of the piles, so as not to leave it thicker than upon the surrounding ground; consequently the corn grew equally well upon this spot, as upon the other parts limed. The other pile, from some accidental cause, was not taken away so carefully—upon this spot the corn came up, but soon withered and died, nor has any thing more than a stinted vegetation grown upon it since.

This experiment, I think, shows conclusively the following results; first, that lime, although containing a large portion of magnesia, is an excellent fertilizer, when put on in *moderate* quantities. Secondly, when put on lavishly, it *destroys* vegetation; and thirdly, when spread upon the grass, and allowed to remain two or three years before ploughing, it acts powerfully on the first crop.

Whilst on the subject, the writer will take occasion to say, that the district of country in

which he resides, (Hartford county, Md.,) now has access, through the medium of the tide-water canal and the Conestoga navigation, to the inexhaustible beds of limestone, in both York and Lancaster counties. The qualities of this lime vary materially—some is said to partake *largely* of magnesia, other of magnesia and slate, other of magnesia and sand; and other again, with but a *small* portion of magnesia. The writer of this thinks he feels warranted in saying, that of this latter description, from 3 to 400 bushels might be applied to the acre, without any injurious effect, yet he is convinced that no advantage could result to the crop that would justify so lavish an application. Economy would forbid it. If from 50 to 100 bushels per acre, admitting it may have in it a portion of magnesia, will produce a crop which in a general way appears to give satisfaction, I can see no inducement to make so large an outlay of capital, unless it be to *prove* that pure lime is perfectly harmless, notwithstanding the quantity put on—whilst we *dare* not use the magnesian lime so lavishly.

I have been the more disposed to take up my pen, from reading an article in the last number of the Cabinet, over the signature of Isaac Wayne Van Leer. I acknowledge my own experience in the use of lime is limited; but I will venture the opinion, that all past experience is against his unqualified denunciation, not only of magnesian lime, but from the anecdote relating to Colonel Brooking, in connexion with some other expressions, of *pure lime also.* Now can it be possible, that this writer can be so wedded to his own notions, backed by a few corroborating circumstances, as to imagine that his views on the subject can ever be endorsed by an *intelligent* and *experienced* public? Well might the supposed query of the *Magnesians* occur to his mind: "How can it be that so many of our intelligent farmers have been so deceived?" But I do not believe that he could so easily answer the question to *their* satisfaction as to his *own.* I have no idea that his views on the subject will draw in the reins of a single team, of the hundreds engaged in hauling lime and limestone, in Lancaster, Chester and Delaware counties, and composed of as fine draught horses as could be found in any three adjoining counties in the union, *maugre* the far-fetched theory, that they had been eating and drinking in the insidious and poisonous effects of magnesian lime, ever since the day of their frisking and gamboling by the sides of their robust and sturdy dams.

That lime acts more or less advantageously on different soils, will be readily conceded, as well as that on some soils, it is entirely inert; but this I suspect is very rare. That there may be also worn-out land, naturally of good quality, but owing to its locality, out of the reach of artificial manure, thus compelling the owners to avail themselves of the only means within their power for improvement, is most strikingly exemplified in the neighborhood of Deer creek. Long since the recollection of the writer, the crop of wheat seldom repaid the cost of cultivation; and a fat bullock, except for family use, was more rare than are 600 to 800 *now*, annually fatted for market; and this improvement has all been brought about by the very means proposed: viz., plaster, clover, ploughing in the latter, and an increased attention to making and saving manure. I could name individuals who had brought their lands to a state of productiveness not often surpassed, yet since the facility of getting lime, and being further spurred on by a visit during the last spring, through Chester and Delaware counties, and becoming convinced to their own entire satisfaction, have since commenced liming with great spirit. My next neighbor, a practical farmer, having brought his lands to a high state of cultivation, and whom I have often heard say that he would not give one bushel of plaster for 100 of lime, has got rid of his scepticism, and is also now liming largely, say from 3000 to 4000 bushels per annum. His first experiment commenced two or three years ago, on a field of about 20 acres, being part of a tract of poor, worn-out land, he had then recently purchased at about three dollars per acre. His crop of hay on this field the last season was not much short of 40 tons. He has since limed nearly the whole of his farm, which promises an equal return to his industry and enterprise. Similar conclusive instances might be multiplied without limit, among which there is one other, having a direct bearing upon the erroneous opinion, that "a second liming has no good effect," with which I must beg the indulgence of taxing the patience of my reader. I had some business during the past summer with our estimable Chief Judge, S. A., who had been for 10 or 15 years in the way of getting lime delivered to him at 28 to 30 cents per bushel; I found him in his meadow with five or six mowers, apparently luxuriating in the pleasure of converting a poor worn out old-field, formerly washed into gullies, and covered over with nothing but sedge grass, into one now yielding to the scythe a swarth that might well satisfy a Chester county farmer. I made some remark upon the abundance of the crop, to which he replied, "this is the effect of a *second* liming,"—repeating with a smile, a saying which he had often heard, "that if the *first* liming put a man *in* jail, the *second* would take him *out* again." He assured me, that wherever he had given his land a second liming, the effects were equally striking, and that his crop of corn the preceding year, on a field of about 15 acres, had yielded 55 bushels to the acre. His then growing crop of corn was on a field which had been limed the first time, about four years since, succeeded the next year by corn, the spring following by oats and clover, and shortly after cutting the oats, a second dressing of lime was applied. From the appearance of the growing crop, I have no doubt the product must have been from 50 to 60 bushels to the acre. A great portion of the farm presented equal evidences of improvement; but the most surprising part is yet to be told. This farm consists of about 400 acres, the soil *naturally* not the best. At the time he commenced liming, he had not for 10 years previous, *owing to its poverty*, pretended to cultivated any thing more than a potato and corn-patch, which with a few tons of swamp hay, constituted his stock of provender for a horse and a few cows. He appeared very much to regret having lost 10

years of improvement. At the commencement, for want of experience, he had put on some lime in too wet a state, and it did no good; his neighbors discouraged him, by telling him "the soil was too poor to improve by lime, it must first have a body of some other *more* active means; that lime *might* then improve it —but until then, he was assuredly throwing away his money." I need hardly say their scepticism is cured, and they are with an enlightened and commendable zeal, and with equal success, now following his example. The lime used in the above instance, in common with all other which we have access to, had also its portion of magnesia. Some six or eight years ago, I recollected to have heard him say, that since he had been liming, he could raise good corn and grass, but that his crops of wheat were not very much improved; this occurring to me at the interview just related, I reminded him of it, at the same time inquiring what was his present experience? His reply was, "that at that time he had limed none of his land but once, that *now* his crops of wheat were good;" inviting me at the same time to go with him to a field recently cut, but still in the shock. It was apparently quite a full crop for our best creek lands.

From all these circumstances taken into consideration, is it not evident that the different opinions resulting from the use of lime, must in a great measure, be owing to the different varieties of our soil? I believe it is a generally admitted fact, that plaster acts more powerfully on some lands than others, and also that on some lands it appears to have no effect whatever. Ought not these considerations to admonish us to qualify our publicly expressed opinions, when they are likely to come in conflict with the long established opinions of others? I hope our respected authors, whose views I have endeavored to refute, will impute to me no other motive, than a desire to render harmless, opinions which, if followed, would paralyze to an incalculable extent, our present progress in agricultural improvement.

A Deer Creek Farmer.

Farmers' Cabinet.

CLOVER MANURE FOR WHEAT.

The wheat crop is the most important of all crops to the farmer. A man who has one hundred acres of cleared land of common quality, ought to raise on an average, one thousand bushels of merchantable wheat and rye, corn, oats and potatoes sufficient to defray the expenses of carrying on the farming. The wheat crop should always be clear gain.

Don't start at this, farmer. A man who has a farm of one hundred acres of cleared land can yearly put forty acres of it in wheat; and if the land be in order, as it should be, and as every farmer may have it, every acre of the forty will give twenty-five bushels, amounting altogether to one thousand bushels. I shall now show how land must be farmed in order to produce in this way. Never break your land before harvest and stir it after, as is customary with many farmers. Much ploughing impoverishes land, and is productive of no good effects. Your wheat ground must be heavily set in clover, and broke up after harvest with three horses, when the seed in the clover is ripe. By thus turning clover down after harvest, when the seed is ripe, it will never miss coming up in the spring with seed. You also save between forty and fifty dollars worth of seed annually which it would take to sow your ground. When the clover is ploughed down after harvest, before you seed the field, harrow it lightly the way you have ploughed it, in order to level the ground, and prevent seed from rolling between the furrows and coming up in rows. Never plough your seed in with shovels, nor harrow it across the ploughing when you have turned down the clover after harvest, lest you raise the clover; but always harrow it in by twice harrowing with light harrows the way you have broken up your ground. Many farmers have ploughed down after harvest, especially if the fall be dry and the winter frigid and close. In turning clover down you must necessarily plough the ground deep, and the first time you turn up the clay, which, being mixed with manure of any sort on the top, is in a bad state to sow wheat on. The wheat after some time will sprout and come up, but will look yellow and very spindling. Its roots after some time will get down among the unrotted clover, and there will choke, and for want of moisture a great deal of the wheat will dwindle away and die. The unrooted clover below will keep the ground wet and springy, so that the frost will injure the wheat not a little. But when the clover is twice ploughed down, the bad effects to the wheat crop arising from unrooted clover are not experienced. You then turn up the clover from below, which was ploughed down before and which is a manure on the top. The seed sown on it now springs up directly, and before winter sets in has taken deep root. The clover now turned down rots very soon in consequence of the rotten clover turned up, which as manure always keeps the ground moist, however dry the fall. You may now go on farming in this way; every time you turn up a coat of clover, turn down one, and your wheat crop will never fail until your land becomes so rich that you will have to reduce it with corn.—*Hagerstown Torchlight.*

MANURES.

March 28th, 1838.

Manures are of three kinds, *vegetable*, *animal* and *mineral*, and a *compost* made of either or all of these intimately combined, by *industry* and *intelligence*, will make grass grow most luxuriantly; and when that is accomplished no farmer need apply to the doctor to know what to do next. His collapsed purse will soon begin to distend itself and to stand up stiffly. But I was going to state that a considerable diversity of principle and practice prevails in regard to the best mode of apply-

ing manures of different kinds, and that difference is most considerable in regard to the application of the mineral manures; particularly lime and marl, or more appropriately the green sand of New Jersey, Delaware and Maryland. As respects plaster of Paris, it is universally admitted that it ought to be applied as a top-dressing to grass or clover; when the rains dissolve portions of it and carry the solution down to the absorbing fibres of the roots, whence it enters into the composition of the plant, for which it furnishes a wholesome invigorating nutriment. There scarcely remains a doubt, but that the same mode of application by top-dressing is also the best mode of applying the green sand, or marl, as it is sometimes called; but of this it would be well for observing farmers, who have used it extensively to furnish the results of their observations and experiments, for the benefit of the craft generally. Chemists say that good green sand or marl on analysis furnishes from 7 to 14 per cent. of potash, and it is now generally believed that this is the ingredient on which its fertilizing property exclusively depends; for it is found to be more or less useful in promoting vegetation in proportion as the potash predominates in its composition. I am informed that in the process of analysis, by which the quantity of potash is determined, they first separate by mechanical means, the silicious matter or common sand from the particles of the green sand or marl, and then subject the latter *only* to the process of chemical analysis, and it is by this means that the percentage above stated has been obtained. Of course that which has least common sand mixed with it is to be preferred, although it might indicate only the same percentage of potash with that containing more silicious matter. The farmers on the peninsula between the Delaware and Chesapeake bays, where this most valuable article has recently been found to exist in great abundance, are very desirous of being informed through the Cabinet from some of our experienced Jersey agriculturists, the proper mode of using this newly discovered source of wealth, to the greatest advantage, and it is to be desired that your next number will oblige them in this respect.

As regards the application of lime, various modes have been resorted to. Some spread it on their Indian corn ground in the spring, and work it in by dressing the corn, from a supposition that ploughing it in, and mixing it well with the soil is an advantage. Others apply it on an open fallow in the summer or fall, preparatory to sowing their winter grain; of course it is by this process well ploughed in and for the same reason, as is adduced for dressing the Indian corn ground with it. Others again spread it on the grass or sward, either in the fall or spring, and this plan of operation is now believed by many to be preferable to either of the other modes of application. Because it is found in regard to all the mineral manures, that their specific gravity being great, they sink into the earth quite as soon as is desirable; lime spread on the sod, in the course of a year will generally be found to have sunk several inches in depth, and then the plough will bring it near the surface again, where its action is most beneficial in decomposing the vegetable fibre, and by this means furnishing a soluble material for plants to feed upon; and at the same time it loosens the soil, by releasing the clods of earth which are often held together by the fine fibres of the roots of the grasses, particularly timothy, the roots of which are very strong and rigid. There is no danger to be apprehended from evaporation in the case of any mineral manure, and some entertain the same opinion in regard to vegetable; but this is a mooted point, and will require further observation before it can be pronounced upon with safety; for if manure of any kind be placed in a vessel over a moderate fire, the only thing that will be found to arise from it will be pure or distilled water, entirely free from any contamination. So that there does not appear to be any danger from manure rising out of the earth, but there may be danger of its sinking too deep for the roots of plants to follow it. Hence I conclude it ought to be our effort to keep it is as near the surface as possible, and depend upon the rain to dissolve it, and carry it to the absorbing fibres of the roots of plants. These remarks are made to elicit the views of the experienced in these matters that we may arrive at the true theory of the application of manures.

AGRICOLA.

Farmers' Cabinet.

USE OF AGRICULTURAL JOURNALS.

In the latter part of the sixteenth century, Sir Walter Raleigh had made the discovery that the potato was a nutritious vegetable. He then introduced it into cultivation among his tenants; but it spread slowly, and was not brought over to this country by emigrants, till a company of Irish presbyterians settled in Londonderry, New Hampshire; and it was forty years more, before this excellent root had become a regular dish on the farmer's table, even in New England. Now, by means of agricultural journals, how soon would the discovery of any new vegetable as valuable as the potato become known throughout the land, and be brought into general cultivation? We will venture to say, if only a single bushel were this day in existence, five years hence the country would be pretty fairly stocked with it; so rapidly would a knowledge of its good qualities and the profit and advantages of cultivating it, be disseminated. And thus the agricultural papers of the present day would be the means of accomplishing as much in five years, as was done in the olden time without their aid, in two centuries. And are they not now annually bringing about the same result, though perhaps in a less degree, than the supposed one stated above? What man, then, with the least regard for the progress of his profession, the developement of the hidden wealth and resources of his country, or the

increased comforts and happiness of his species, will refuse to subscribe for one or more agricultural papers?—*American Agriculturist.*

LARGE CROP OF CORN OF MR. YOUNG, OF KENTUCKY.

As some desire has been manifested by several of our correspondents, to know how Mr. Young produced so large a corn crop as 190 bushels to the acre, alluded to by Judge Beatty, in his letter published in the January No. of the American Agriculturist, we gratify their curiosity at once, by copying it from an exchange paper. We do not recollect at this moment where it first appeared, or we should give credit for the quotation.

The editor of the Dollar Farmer recommends not planting quite so early as the 25th of March, for fear of frosts and chilly mornings at this period, even as far south as Kentucky; but as there is equal danger to be apprehended from the excessive dry weather during July, in that latitude, he is of opinion that soaking the seed in a solution of saltpetre will bring the corn forward equally early and rapidly, although planted somewhat later.

It will be seen by reference to p. 43 of May No. of American Agriculturist, that we recommended soaking corn in a saltpetre solution, previous to planting. We have frequently tested the efficacy of saltpetre in our corn crops; and for a late experiment upon this matter, by Mr. Benedict, of Staten Island, we would refer to our August No., p. 159.

"My universal rule," says Mr. Young, "is to plough my corn land the fall preceding the spring when I plant; and as early in the spring as possible, I cross-plough as deep as circumstances will permit; as soon as this is done, I commence checking off—the first way with my large ploughs, and the second with my small ones, the checks 3 feet by 3, admitting of working the land both ways. And then I plant my corn from the 20th to the 25th of March—a rule to which I adhere with scrupulous exactness, planting from eight to twelve grains in each hill, covering the same from *four to six inches deep*, greatly preferring the latter depth. So soon as my corn is up of sufficient height, I start the large harrow directly over the rows, allowing a horse to walk each side; harrowing the way the corn was planted; and on land prepared as above and harrowed as directed, the hoeing part will be so completely performed by this process, that it will satisfy the most sceptical. Then allowing the corn thus harrowed, to remain a few days, I start my small ploughs with the bar next the corn; and so nicely will this be done, that when a row is thus ploughed, so completely will the intermediate spaces, hills, &c. be lapped in by the loose earth, occasioned by this system of close ploughing, as to render any other work useless for a time. I thin to four stalks upon a hill, never having to transplant; the second ploughing being performed with the mould-board towards the rows of corn; and so rapid has been the growth of the corn between the first and second ploughings, that this is performed with ease; and when in this stage, I consider my crop safe; my general rule being never to plough my corn more than four times, and harrow once. My practice is, to put a field in corn two successive years, then grass it and let it lie eight years—a rule from which I never deviate. Now I do not pretend that the labor bestowed upon a sod field to put it in a state of thorough cultivation, does not meet with a fair equivalent from one crop; but I presume no farmer will doubt when I say the second year's crop from sod land is better than the first, with no more than one-half the labor. The best system of farming is to produce the greatest amount of profit from the smallest amount of labor."

LEACHED OR SLACKED ASHES AS A MANURE.

Whilst nearly all who have tried ashes as a manure, bear testimony, in the strongest terms, to their superior efficiency as an improver of the soil; still we occasionally hear the question mooted, whether they possess any virtue as a manure? This is the more to be regretted, as even experience, itself, would seem to have but little, if any influence in settling a question of the deepest importance to every agriculturist living near any of our large cities, or on navigable water leading to them. To our mind, leached ashes will bear hauling by land several miles, and that even when the first cost is added to that of transportation, they will be found to be a cheap manure. When they can be transported by water communication, in quantities, and at less cost, they are the more valuable; and, therefore, those who may reside on navigable rivers, convenient for their procurement and delivery, should make it a point of duty to themselves, and their country, to obtain them, as there can be no doubt that in addition to their efficacy in promptly restoring exhausted soils to a state of desirable fertility, they are next to lime, among the most lasting manures, ever applied to the earth. Among their other good qualities, they are equally beneficial when applied to *clays*, as to *sands*, and *sandy loams*—disintegrating the tenacious particles of the first, thus rendering them friable and easy of being worked; and imparting body and consistency to the two latter, so as to give to them a greatly increased capacity for retaining manures. To cold clays, they are particularly adapted by their warming qualities, infusing, as they do, an active and highly beneficial principle into bodies, which otherwise, might have remained inert, if not noxious to healthful vegetation.

As a topdressing to meadows, when applied at proper seasons, and in proper quantities, they are found productive of the happiest effects.

Applied to *corn*, *wheat*, *rye*, *oats*, *buckwheat*, *turnips*, *potatoes*, indeed, to almost the entire vegetable family, they are eminently useful.

For *turnips* and *corn*, we know of no manure that can compare with them in the degree of benefits resulting. On *corn* they have been known, even when applied in minute quantities to the hills say, a gill to each, to produce the most wonderful effects.

Having spoken of the proper seasons of application, and *proper quantities*, it may not be inopportune to remark, that on meadows they should be spread in early fall, winter or spring, when the ground is dry and firm, and when there be no danger of poaching—to all grain crops they should be applied to the surface and harrowed in at the time of seeding; the *proper quantity*, we conceive to be, on *clays*, 200 bushels; on *sands* and *loams*, from 100 to 150 bushels to the acre.

Wood ashes, we have seen it stated, consists principally of potash or vegetable alkali, united with carbonic acid,* and that these substances have been proved by analysis, to exist in most plants. Now, if these be the principal ingredients in the composition of ashes, as they are known to be promotive of the vigorous growth of plants, may not ashes, besides possessing the mechanical qualities, we have before ascribed to them—of decreasing the tenacity and warming clays—and of giving tenacity to sands and loams. We say, may they not, also, contain to a considerable extent, the principle of nutrition? We incline to this belief; and we think we are borne out in our opinion by the fact, of the astonishing difference in *product* they are known to effect, even when used in small quantities. The mere disintegration, or the division of the particles in the one soil, or the conferring *substance* upon the other, could not if they possessed no other than stimulative powers, impart such lasting vigor, and give such productive capacity to plants, as are invariably witnessed. For *stimulation* without *nourishment*, good and wholesome nourishment, would, by mere force of its own action, bring about repletion, and consequently, premature decay and dissolution. Is vegetable *alkali*, combined with carbonic acid and potash, essential to the growth of plants? Certainly, or we would not, by analysis, be able to find them forming the component parts of *healthy* plants. We admit, that the lacteals of the roots even of *healthy* plants, might take up these substances in their liquid or gaseous forms; but then, if they did not contain congenial *food*, but were merely *stimulative*, the very *excess* of the latter, would produce death in plants, as do alcoholic stimulants in the human subject.—*Farmer and Gardener.*

HINTS FOR MAKING A MANURE.

BY AN AMATEUR FARMER.

The following essay, or, rather, we should say, description of a manure, obtained the prize at the last meeting of the Holywood Agricultural Society. As it may be of advantage to farmers, and agriculturists generally, we give it the benefit of our circulation.

" *To the President, Vice Presidents, Treasurer, Secretary, Committee, and Members of the Holywood Agricultural Society.*

GENTLEMEN,—Having observed, in your published list of premiums for this year, which, by some means, fell into my hands, one offered by Mr. Harlin, for the best essay on, or description of, a manure, or manures, which will make the best substitute for that usually prepared in the farm-yard, procured from towns, I thought I would take a chance for it; and resolved, as I have many opportunities of seeing the crops growing, and of conversing with those who grow them, to cast my eyes about, and seek for information on the different manures by which they are produced. I at last fixed upon a farmer's field where a number of persons had their potato crops planted beside each other. A great difference in the several lots was very perceptible, and my first impression naturally was, as the farmer, the owner of the field, had the largest manure-heap, the produce of many cattle, he should have the best crop. On inquiry, however, I found I was mistaken, for one lot, of a person who kept only one pig, and another belonging to a cottager who kept no pig, were both better than the general crop. Now, said I to myself, I have the secret to make good manure (and, I must confess, my mind turned more strongly on the premium), if I can only prevail on this cottager who keeps no pig, to tell me how he makes *his* manure—what *he* carries on on a small scale, I will conduct on a large one. He appeared quite astonished on my making inquiry on so simple a matter (as he called it) as a cottager's manure heap, and thought me very ignorant, indeed. However, in a very few words, he told me, that he collected all the green weeds he could, scraped the roads, pared off all the green edges, and cleaned out the *water-tables* opposite his own house, and as much farther as he could; and, if his landlord would allow him, *scoured* out a ditch, and even picked up quantities of the *red till*, by times. All these he collected into a heap, and he never allowed a drop of suds, dirty water, house-buckets, or any other liquid that could be collected, to be lost; but poured all on the heap of rubbish he had gathered, and, after some time, turned it carefully, and mixed it properly. On inquiry, I found, that he did not apply a greater quantity of this manure to produce his crops, than is usually done from the farm-yard; and he assured me, that its good effects remained in the soil, and appeared on the future crops. Now I can fancy the learned essayists, who may compete for this premium, in classic order and in modern style, dividing their subject into different heads, and explaining the meaning of terms, in which I will most certainly fall short! O for the pen (or pencil) of a Franklin, a Cobbett, a Doyle, or a Blacker, to paint my subject in its proper colors, which, though not so beautifully blended as those of the rainbow, yet present to the eye of the amateur agriculturist, a pleasing

* Gypsum has also been detected in ashes.

variety of black and green, diversified with orange and yellow! But you must all have heard, that wishing, of all occupations, is the worst. I must, therefore, as this is only intended for a plain, humble prosy description trust to my own style to describe the process and how followed, for two seasons. You must therefore, for the present, place yourselves, in imagination, beside a large heap of 80 to 100 loads of road scrapings, water-table scourings, weeds, and every kind of refuse that could be scraped together, with several puncheons of suds, and all other sorts of liquid manure which are produced about a farm-house (with some more solid,) discharged into numerous communicating cuts, made over and through the surface of the above-described heap, the liquid being always immediately covered over, to prevent evaporation. The cuts must be made in different parts of the surface of the heap, for each successive puncheon of liquid, till all is completely saturated; then an additional layer of earth and other material, and so on, till it is ready for a complete turning. Or, suppose a pit dug in a convenient part of a field, or a tank made near your house, both of which I have tried, with a layer of finely broken earth in the bottom, on which a puncheon of the material before described has been discharged, the whole properly mixed together with a shovel, the operator standing on the brink of the pit or tank; and, afterwards, a thin layer of earth added, to prevent evaporation. In another week, or as often as possible, add another layer of finely broken earth, and another puncheon, mixed and covered over as before directed, till your pit or tank is full, and ready to be cleared out, to give room for another '*making*.' When the material is thrown out of the pit, it will be always necessary and proper to cover it entirely over with weeds, or some kind of refuse; but the more vegetable matter, the better. This matter, however, is not one for supposition; it has been carried into effect, and could not be kept a secret; for the process drew wondering spectators, from its perfuming the air with that rich odor which would make a knowing agriculturist look six months before him, and say to himself,—This will come to something; if crops don't grow after the application of this manure * * * I have heard of, and seen essays which would tell you what might be done; but here is a matter on which you may exercise nearly all your senses —you can see it, touch it; most certainly smell it; and, at any stage of the process, you may readily hear it. I will not detain you with the obstacles I had to encounter in carrying that great matter into effect, being laughed at by some, and ridiculed by others. But, before concluding, just observe (that this manure may have fair play), your ground must be first well drained—different manures are adapted to different soils and different plants—and that a long continuation of the same manure to the same soil is often injudicious. I had almost forgotten to remark, that I have known many farmers to draw manure, at a dear rate, from towns, who were allowing much liquid manure, for want of a very trifling arrangement,

[illegible] aste its richness on
[illegible] a subject which de-
[illegible] tentive consideration;
[illegible] not to be too long about
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[illegible] years, but could
[illegible] description of
[illegible] premium,
[illegible] tary, who will,
if necessary, tell the name of the writer, who has adopted, as his motto,

"KEEP YOUR EYES OPEN."

London Farmers' Magazine.

BEST MODE OF APPLYING LIME,

UNDER DIFFERENT CIRCUMSTANCES, INCLUDING QUANTITY, ACCORDING TO THE KINDS OF SOIL.

The virtue of lime consists chiefly in its stimulating effects in bringing the inert vegetable matter in the soil into proper action, and is therefore not unfrequently used to disadvantage, and that more particularly by spreading it upon the sward when it is in an effete state.

Lime can, in many situations, be spread in autumn upon fallow, where the land is clean of weeds, by harrowing it into the ground after the latter has got the first or stubble furrow; but the moist climate of Ayrshire, at that period, almost utterly precludes the application of that article in a caustic state, (or what is provincially called quick or hot lime,) a state in which lime ought invariably to be applied, when used without any other admixture. But lime can be most judiciously used when the land is thoroughly cleaned, preparatory to forming the drills for a turnip or even a potato crop, or when it is undergoing a summer fallow after the root weeds are extirpated, care being taken to keep the manure as near the surface as possible, by not making deep plough furrows. The above named modes of application are much the cheapest, and by far the most effective in their operation.

On gentlemen's policies, or on grass lands not intended to be broken up by the plough, or where lands have for a long time been in a neglected or uncultivated state, and in the latter case are consequently overrun with coarse herbage, and have contracted an acidity unfavorable to vegetation, lime applied upon the sward may, all things considered, be advantageously used; but to spread it upon the sward where the soil admits of a summer fallow or the turnip husbandry, is the height of absurdity; for, in the former case, more or less is washed off the ground if applied in a powdery state, while the remainder, from being exposed to all the vicissitudes of the season, soon becomes effete, and its stimulating effects are consequently deteriorated.

The good effects of lime can be obtained, in some soils, with much less quantities than in others, and that more particularly on light soils; and from various experiments, I have found that two carts of lime, when used in a powdery state, are productive of equal benefit,

as three carts whe[illegible] state, besides, in the [illegible] only fatal to the gr[illegible] every description whi[illegible] of its influence. Bu[illegible] stated, the caustic[illegible] to bring the in[illegible] into pro[illegible] er[illegible] sometim[illegible] too often with[illegible] consequence of which it is, that the land, in place of becoming fertilized, is exhausted.

The quantity of lime necessary to spread upon lands ought to vary according to soil and circumstances, and it is abundantly obvious that the first liming is always attended with the most powerful effects; and it may be remarked that, in such cases, 50 bushels of shells of ordinary quality may, on light sharp soils, if applied under proper attention, be considered as a sufficient dose. On lands where the soil consists of a medium texture, from 50 to 100 bushels may be considered as a fair quantity; and on clays, in proportion to their tenacity, from 100 to 200 bushels may be used with propriety, when the ground is in a state of aration.

But when that manure is not applied for the first time, or to what is technically called new land, and also when it is applied to lands which have not been for a long period, and are still not intended to be broken up by the plough, about one-third more in quantity will be found absolutely necessary. I am aware, however, that some maintain that in top-dressing grass lands, under all circumstances, a less quantity of lime may be applied; but these arguments are, in my humble opinion, utterly fallacious, provided that article be properly applied to arable lands in the manner above described. It ought also to have been alluded to in the proper place, that lime may be used amongst turnips and potatoes after the shaws of both are above ground, and even after the former are thinned out; but it is always advantageous to apply it before the drills are made up at first. On the whole it is much better to spread a good dose at first than to apply small quantities at a time; and where the operation has been frequently repeated, lime may be more judiciously used by way of compost in mixing it up with earth, weeds or other vegetable matter, and by proper attention to mixing and turning, its caustic effects are thereby corrected, and the result tends to excite the fertilizing qualities of the admixture.

Lime may be used most advantageously every nine or ten years at least, upon land that is kept under a proper rotation of cropping, but it will never repay the expense of laying it upon worn out lands, without the aid of other manure if such have been previously limed, and more especially such as have been kept clean and heavily cropped.

In fine the sourest of soils, after an effective drainage, may have their acidity corrected by lime, marl, or other calcareous manures; but to apply any such to land saturated with water is, comparatively speaking, like throwing it into the sea, till the redundancy of moisture is thoroughly removed.—*London Farmers' Magazine.*

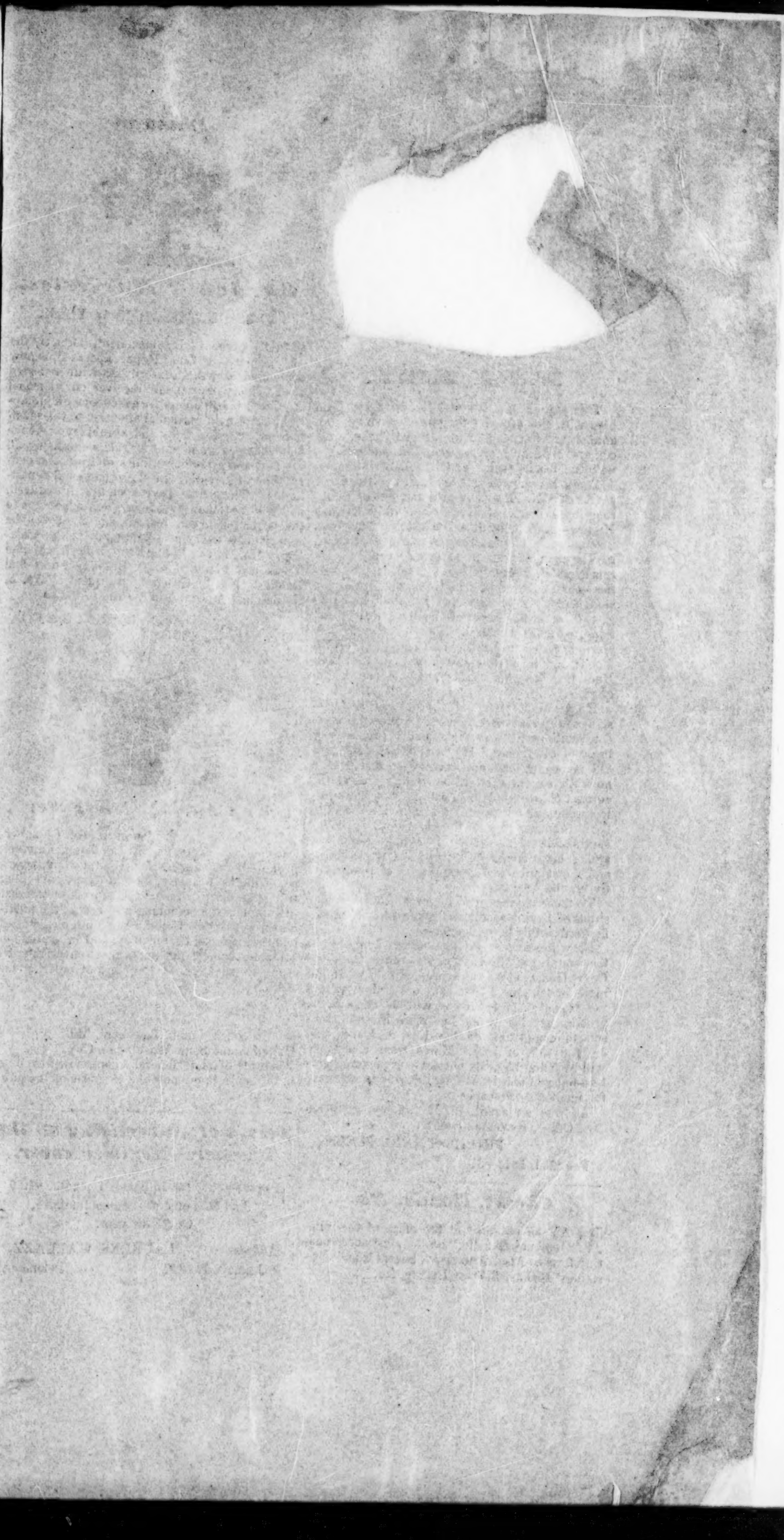
CONTENTS.

ORIGINAL COMMUNICATIONS.

	Page
Agricultural periodicals. Suggestions to farmers	129
On winter furrowing and drill planting	136
Proceedings of King William Agricultural Society. Address of Dr. Braxton	143
Renovation of old meadows	154
Rust	155
Culture of hemp	156
Agricultural improvement in Norfolk Co.	157
Railroads of Virginia and North Carolina	165
Liming in Montgomery county, Md. Rust	166
Bone dust	172
Prices of agricultural products	172

SELECTIONS.

Home improvements	131
Place and management of the dung heap	132
Charcoal for manure	132
Use of ashes	133
Sixth agricultural meeting at the State House. Subject—Mineral and concentrated manures	134
Analyses of Indian corn and ruta baga	138
Seed corn	139
Saltpetre for manure. Slavers in horses	139
Lard oil	140
Management and application of manures	140
Value of plaster and ashes	143
Making vinegar	147
A cheap paint	147
To stop bleeding	147
Bommer's method of making manure	148
Manures	149
Corn cultivated for the stalk and leaf alone	149
Recent and extensive marling in South Carolina	151
Surface manuring. Renovation of worn out lands	158
Report from the commissioner of patents. Mediterranean wheat. Corn-stalk sugar	162
Soap-making	164
Facts worthy of notice	164
Value of urine as a manure	167
Eighth agricultural meeting at Boston—Subject, the honey bee	168
Lice on cattle	171
The basket willow	171
Rearing of calves	173
Cultivation of water-melons and cantelopes	173
Nature and treatment of splents in horses	174
Gardens	175
Saltpetre	176
The Hessian fly	177
Cement to mend broken China or glass	178
Ashes on corn	179
Liquid manure	179
Preserving fresh meat	179
Best method of making cheese	182
Abortion in the cow	183
Magnesian lime	185
Clover manure for wheat!	187
Manures	187
Use of agricultural journals	188
Large crop of corn	189
Leached ashes as a manure	189
Hints for making a manure	190
Best mode of applying lime	191



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